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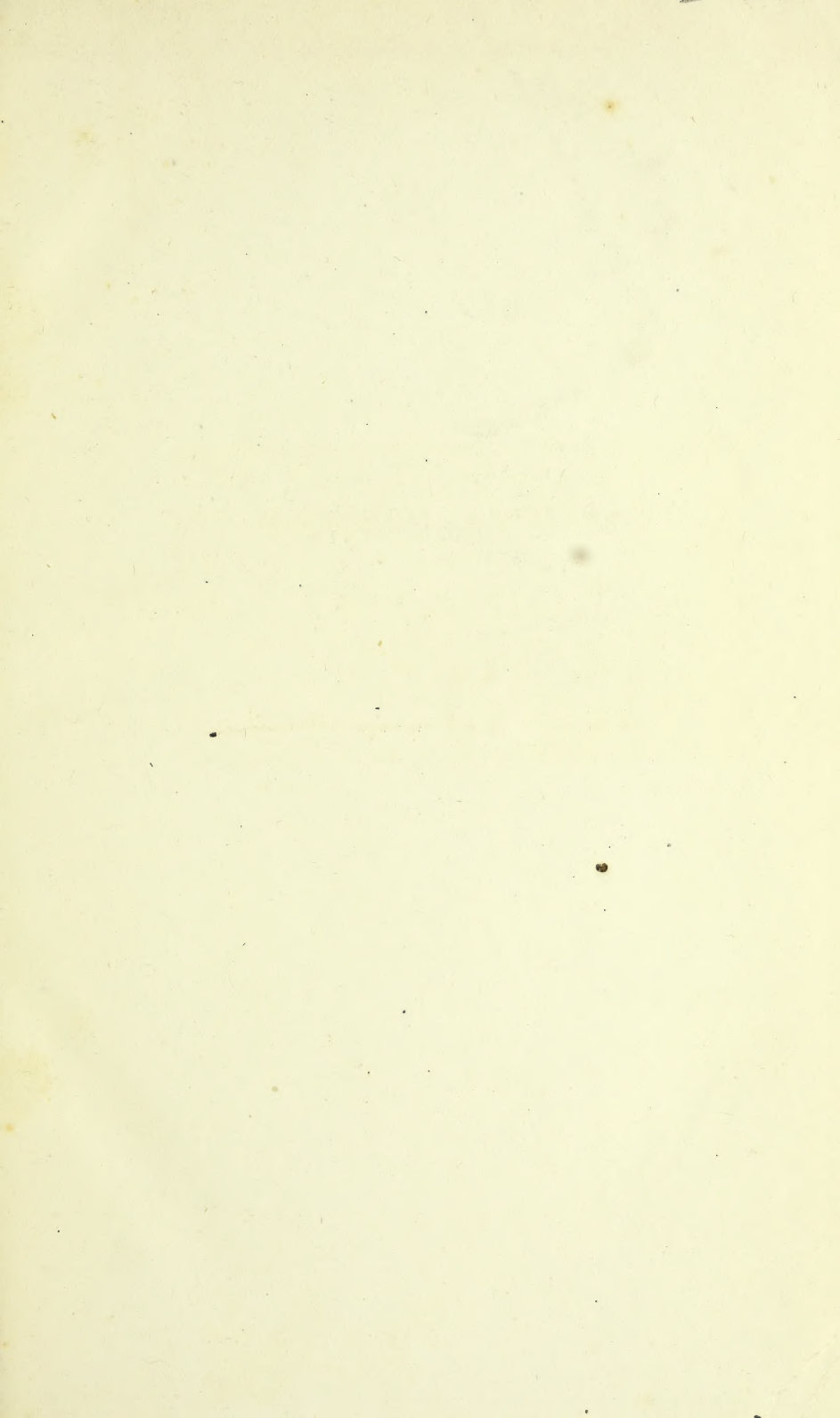
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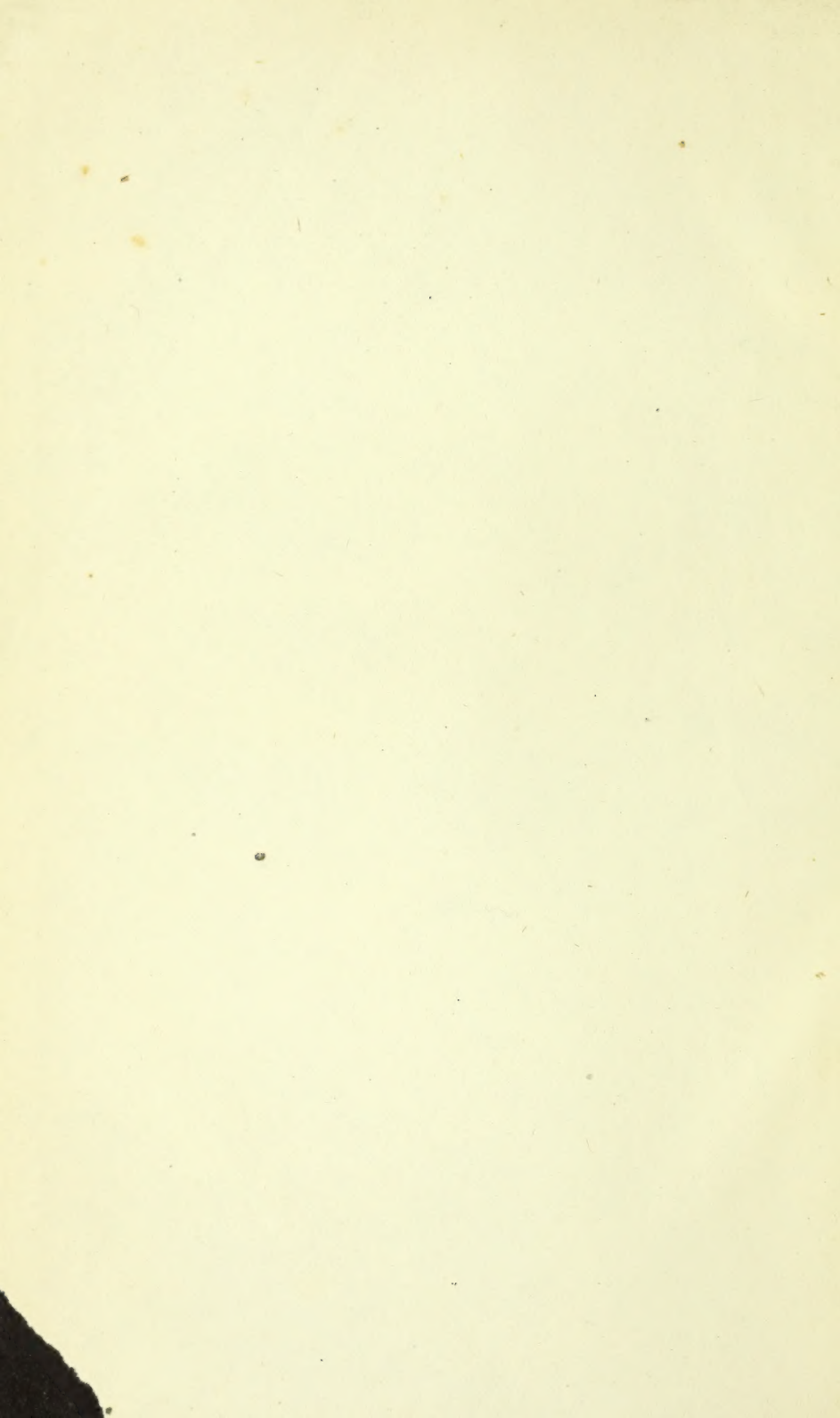
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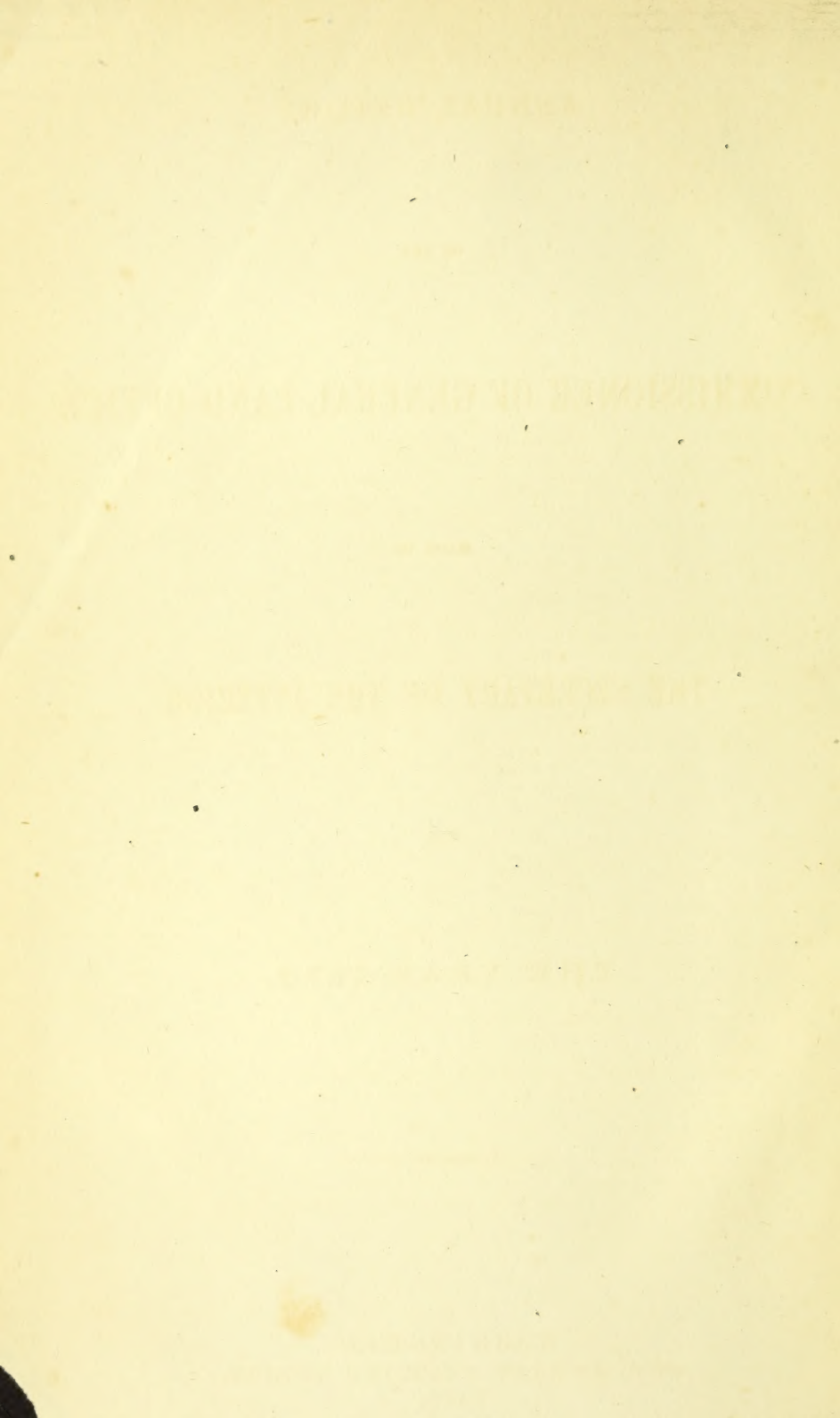
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ANNUAL REPORT

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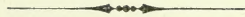
COMMISSIONER OF GENERAL LAND OFFICE

MADE TO

THE SECRETARY OF THE INTERIOR

FOR

THE YEAR 1870.



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1872.

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REPORT

OF THE

COMMISSIONER OF THE GENERAL LAND OFFICE.

DEPARTMENT OF THE INTERIOR,
General Land Office, October 27, 1870.

SIR: In accordance with the requirements of the resolution adopted on the 28th July, 1855, by the Senate of the United States, the following is presented as an abstract of the accompanying annual report of this office for the fiscal year ending June 30, 1870:

First. The operations of this branch of the service during the fiscal year ending on the 30th June, 1870, have been coextensive with the whole national domain, except Alaska; the new Territory of Wyoming having been organized into a district for surveys and disposal of land by the act of Congress of February 5, 1870.

Second. Statement showing that there are now seventeen different surveying districts, extending from Florida on the Atlantic to the Pacific, and eighty different land districts, each having a register and receiver for local convenience in the disposal of the public lands.

Third. Results of operations for the last year in the disposal of public lands, shown as follows, viz:

	Acres.
Cash sales, including a small amount of military scrip, received as money.....	2, 159, 515. 81
Locations of military bounty-land warrants under acts of 1847, 1850, 1852, 1855.....	512, 360. 00
Homestead entries under acts of 1862 and acts supplemental.....	3, 698, 910. 05
Agricultural college scrip locations.....	192, 848. 21
Certified for railways under various acts of Congress...	996, 685. 28
Certified for wagon roads under statutory requirements.	36, 628. 01
Approved to States as swamp lands, and selected as indemnity for lands covered by adverse rights.....	481, 638. 31
Indian scrip locations, Chippewa and Sioux.....	16, 827. 33
Total of lands disposed of during the year.....	8, 095, 413. 00
Aggregate of the previous year.....	7, 666, 151. 97
Increased disposal.....	429, 261. 03

Fourth. The cash receipts for ordinary sales, preëmption, (including a small quantity of military scrip received as money;) for the five-dollar and ten-dollar homestead payments; for commissions on homesteads; fees for locating agricultural scrip and military bounty-land warrants; for fees on preëmptions, donations, railroad selections, and for certified transcripts, make up an aggregate of cash receipts during the said fiscal year ending June 30, 1870, of \$3,663,513 90, being a decrease from the

preceding year, the reason of which is shown; yet, although the receipts in cash for the last fiscal year are not equal to those of the year previous, the quantity of land disposed of and opened to settlement is considerably in excess of that disposed of during the year ending June 30, 1869.

Fifth. Influence of the liberal policy in disposing of the public lands on immigration pointed out, and the value of the immigrant to this country in a financial point of view considered.

Sixth. The total area of the public domain stated as 1,834,998,400 acres; quantity disposed of to June 30, 1870, as 447,266,190.16 acres, leaving still in possession of the Government, as unsold and unappropriated, an area of 1,387,732,209.84 acres. A prospective view taken of annual disposals, and an increase anticipated much in excess of the present rates.

NATIONAL DOMAIN—HISTORICAL OUTLINE.

Seventh. Our territorial growth—its origin and progress traced; results presented as to the gradual acquisition by the United States of proprietary rights in the public domain.

Eighth. Liberal policy of our Government shown in regard to titles derived from foreign governments, when the latter were in possession of certain territory now within the limits of the republic. The legislative, judicial, and executive departments concurrent in securing to private individuals such titles of every grade, from complete grants down even to inceptive interests, where held in good faith; all such are surveyed and finally carried into patents by the United States, which are furnished to the actual owners.

Ninth. Indian usufructuary rights considered rulings referred to of the judicial tribunals.

Tenth. American land titles discussed; allodial tenures; early legislation in this respect; effect upon social order and individual prosperity.

Eleventh. United States surveying system described; the ratio shown of the surface surveyed in each political division of the public lands; simplicity and efficiency of the system indicated.

Twelfth. Aggregate area of the public domain, as shown in the tabular statements accompanying report—acres .. 1, 834, 998, 400
Of which there were surveyed during the
last fiscal year ending June 30, 1870, an
extent equal to—acres..... 18, 165, 278
To this quantity add the preëxisting sur-
veys 509, 717, 674

Thirteenth. An aggregate surface of..... 527, 882, 952
acres, over which the lines of the United States surveys
have been extended from the commencement in the year
1785 to the 30th June, 1870.

Fourteenth. The existing unsurveyed area is equal to—
acres..... 1, 307, 115, 448

Fifteenth. Astronomical boundary line established under appropriation act of March 2, 1867, between California and Oregon, is 212½ miles in length; sketch given of the topographical features of the country which the line traverses; grandeur of its scenery.

	Miles	ch.	fks.
<i>Sixteenth.</i> Boundary in like manner established between Nebraska and Colorado under appropriation act of July 20, 1868. Line running east and west equal to.....	104	72	07
<i>Seventeenth.</i> That running north and south, in length equal to.....	68	79	59
<i>Eighteenth.</i> The line between Nebraska and Wyoming running north and south, in length	138	22	67
Making an aggregate length of these lines of	312	14	33

which have been astronomically established.

Nineteenth. Boundary between Colorado and Kansas estimated in length at 210 miles; survey not yet made; appropriation inadequate. The sum now required is \$7,350, that heretofore appropriated having become inapplicable by operation of law.

Twentieth. Eastern boundary of Nevada, being a line on the west common to Utah and Arizona, and of an estimated length of 425 miles. A contract has been made for this survey by the surveyor general of Nevada, under appropriation act of July 20, 1868. Surveyors are in the field and the survey will be prosecuted to early completion.

SURVEYS OF INDIAN RESERVATIONS.

Twenty-first. Pursuant to the directions of the Secretary of the Interior, in order to meet the requirements of the treaty of February 19, 1867, with the Sisseton, Wahpeton, and Cut-Head bands of Indians of Dakota, a contract has been made for the survey of their reservation, equal to 918,352.70 acres, payable out of Indian appropriations.

Twenty-second. Yankton Indian reservation in Dakota under treaty of April 19, 1858. In accordance with departmental orders, the survey of a portion of this reservation into 80-acre tracts fronting the Missouri River has been contracted for, the work completed, the returns whereof are soon expected.

Twenty-third. The Navajo Indian reservation, part in New Mexico, and part in Arizona; contract has been made pursuant to departmental instructions under the provisions of the treaty concluded June 1, 1868, with those Indians, the reservation embracing over three millions of acres.

Twenty-fourth. Reservation in Idaho Territory for the Nez Percés; under treaty of August 13, 1868, with those Indians, a contract has been made for the survey of their reservation.

Twenty-fifth. Chickasaw lands in the Indian Territory. A contract has been made by order of the Department of the Interior for the survey of these lands into 160-acre tracts, and the surveyors have departed for the theater of their operations.

Twenty-sixth. Outlines given of the public-land States and Territories, with reference to their several chorographic peculiarities; grand openings to individual enterprise now developing in the Great West; attractions for European emigrants, and for our citizens residing in the older States; sketches given of the several States and Territories according to the following order:

THE ATLANTIC SLOPE.

Twenty-seventh. Public-land States in this classification are situated on the Gulf of Mexico. Florida, (with a long line of Atlantic coast,)

Alabama, Mississippi, and Louisiana. (The larger portion of the last-named falling in the valley of the Mississippi.) These four States embrace an area nearly equal to that of France. Climate, soil, and productions bear a general similarity, having a semi-tropical type, yet verging upon the more decided peculiarities of the temperate zone. Their most important staples are cotton, sugar, rice, and great variety of delicious and semi-tropical fruits.

Twenty-eighth. States in the valley of the Mississippi, east of that river—Ohio, Indiana, Illinois, Michigan, Wisconsin.

THE GREAT REGION OF WHEAT, CORN, AND STAPLE ESCULENTS—
SKETCH OF THEIR RESOURCES.

Twenty-ninth. States and Territories west of the river in the Mississippi Valley—Minnesota, (a small part east of the river,) Dakota, Iowa, Missouri, Arkansas, Kansas, Nebraska. General descriptions given of these political divisions, rich in varied and staple products.

Thirtieth. Territories traversed by the Rocky Mountains, beginning in the south, with New Mexico, Arizona, advancing to Colorado, Wyoming, Idaho, Montana, and Utah; outlines given of these political divisions in regard to their natural resources.

Thirty-first. Political divisions on the Pacific slope: Alaska, Washington, Oregon, California, and Nevada. Brief descriptions given of their resources.

Thirty-second. Public sales during the last fiscal year. There have been offered at public sale, pursuant to proclamation of the President, in—

	Acres.
New Mexico	1, 644, 388
Colorado	143, 000
Total.....	<u>1, 787, 388</u>

And there have been restored to market of lands heretofore withdrawn for railroad grants in—

	Acres.
Kansas.....	660, 000
California	201, 000
Making of lands restored a total of.....	<u>861, 000</u>

Thirty-third. Preëmption privileges in obtaining titles to the public lands fully explained, and the effect of the recent provision in the act of July 14, 1870, (U. S. Stat. for 1870, p. 279, chap. 272,) pointed out, by which, in respect to surveyed and unoffered land, preëmption, proof, and settlement are required to be made within eighteen months after expiration of the time prescribed for filing declaratory statements; such statements to be filed within three months after settlement upon this class of lands, and within three months from the filing of plat of survey in the district land office where settlement is made before survey.

Thirty-fourth. Benefits suggested as resulting from the operations of the homestead laws.

Thirty-fifth. Grants in the interests of education, common schools, colleges, universities, equal to 78,576,802 acres.

Thirty-sixth. Military services. Aggregate granted from the close of the Revolution to the 30th June, 1870, being equal to 73,463,961 acres.

Thirty-seventh. Concessions in aid of internal improvements, giving the status of each and the quantity donated under general and special grants, amounting in the aggregate to 13,853,054.93 acres, exclusive of railroads and wagon roads.

Thirty-eighth. Swamp and overflowed lands; aggregate area selected in place under acts of 1849 and 1850, from commencement of operations to 30th June, 1870, equal to 60,459,868.84 acres; quantity certified as indemnity to end of last fiscal year equals 637,261.81 acres; paid over as cash indemnity from commencement of that principle to end of last fiscal year equals \$728,491 16.

Thirty-ninth. Sketch of the mineral resources of the United States.

Fortieth. Operations of the mining act shown, with mode of proceeding to obtain title to mines of gold, silver, cinnabar, and copper, as also to placer claims.

Forty-first. Railway and wagon-road grants; results presented.

Forty-second. Town sites; showing the operations under congressional legislation in this respect as to urban settlements.

Forty-third. California titles under Spanish and Mexican grants; also as to donations in Oregon and Washington, inaugurated in the early history of that region to promote settlement.

Forty-fourth. The land ledger system adopted in the General Land Office at an early period, whereby, in condensed form, the whole history of the disposal of all tracts from the foundation of the Government is shown to latest dates.

Forty-fifth. Adaptation of public domain to special branches of agricultural productions.

Forty-sixth. Paper on tea culture accompanying annual report.

Forty-seventh. Also on silk culture.

Forty-eighth. Closing chapter, illustrating the influence of the public land system upon the development of our resources, especially upon our domestic and foreign trade.

Forty-ninth. The annual report, besides the papers on tea culture and silk culture, is accompanied by separate reports from the surveyors general, with tabular statements exhibiting the disposal of the public lands and embracing the details and aggregates. Maps have been prepared, subject to order, indicating the progress of surveys in the public land States and Territories. With the report there are, also, instructions as to the mode of obtaining title under the various laws of Congress to agricultural and mineral lands. Special communications from scientific gentlemen, and a map showing the route of trade from an early period to recent dates. Our separate, or connected map, prepared under joint resolution approved January 6, 1863, (12 U. S. Stat., p. 822,) accompanies this annual report.

Respectfully submitted.

JOS. S. WILSON,
Commissioner General Land Office.

The Honorable SECRETARY OF THE INTERIOR.

DEPARTMENT OF THE INTERIOR,
General Land Office, October 27, 1870.

SIR. The operations of this branch of the service during the fiscal year terminating on the 30th June, 1870, have been coextensive with the whole national domain, except Alaska; the new and last-created Territory of Wyoming having been organized into a district for surveys and disposal of lands by the statute of February 5, 1870. By act of Congress, approved July 9, 1870, Arizona was detached from the jurisdiction of the United States surveyor general of California and erected into a separate surveying district, so that now there are seventeen different surveying departments, extending from Florida, on the Atlantic, to the Pacific Ocean. The public surveys have been established, to a greater or less extent, under the direction of surveyors general, by skillful deputies, in the States of Oregon, California, Nevada, Nebraska, Minnesota, Louisiana, and Florida, and in the Territories of Dakota, Colorado, New Mexico, Wyoming, Montana, Idaho, Washington, Utah, and Arizona. During the past fiscal year the public surveys have been extended over 18,165,278 acres. The separate reports of the surveyors general, in the appendix herewith, convey much varied and useful information respecting the resources of the different parts of the public domain. There are eighty different land districts established for local convenience and obtaining titles to the public lands, each district having a register and receiver authorized by law to receive and act upon all applications for obtaining titles. The land office formerly at Monroe, Louisiana, has been consolidated with that at New Orleans; the district office at Los Angeles, California, has been restored and reorganized, while new offices have been created for the districts of Springfield and Pembina, in Dakota; Pueblo, in Colorado, and for the two new districts in Kansas—the one with the local office at Augusta, the other at Concordia. A list of all the United States land districts, with the localities of the different local offices, will be found in the appendix.

The officers at the places indicated are ready to accommodate parties desirous of obtaining titles under the laws of Congress.

Results in the disposal of the public lands during the aforesaid last fiscal year may be summed up as follows:

	Acres.
Cash sale, including a small amount of military scrip....	2, 159, 515. 81
Locations of military bounty-land warrants.....	512, 360. 00
Homestead entries under the act of 1862 and acts supplemental	3, 698, 910. 05
Agricultural college scrip locations.....	192, 848. 21
Certified for railways under various acts of Congress....	996, 685. 28
Certified for wagon roads under statutory requirements..	36, 628. 01
Approved to States as swamp lands and selections in place as indemnity for lands covered by adverse rights..	481, 638. 31
Indian scrip locations, Chippewa and Sioux.....	16, 827. 33
Total of lands disposed of during the fiscal year..	8, 695, 413. 00
Aggregate of the previous year.....	7, 666, 151. 97
Increased disposal.....	429, 261. 03

The receipts during the year were as follows:

Cash and bounty-land scrip treated as cash, for lands at and above the minimum of \$1 25 per acre..... \$3, 123, 677 39

Aggregate of homestead fees, \$5 and \$10, paid pursuant to the homestead law of 1862.....	\$300,025 00
Amount paid as fees of registers and receivers under the homestead acts of 1862 and 1864.....	132,383 99
Aggregate fees received on locations, selections, and donations, fees in preëmption cases, and for certified transcripts	107,427 52
Total gross receipts.....	<u>3,663,513 90</u>

The above figures show a decrease in the aggregate cash receipts compared with the previous fiscal year. The reason of this is sufficiently obvious upon inspection of the foregoing statement. Though the general aggregate of land disposed of during the year has increased nearly half a million of acres, the increase has been confined to those branches which bring but little revenue to the Government. While the military bounty-land warrant locations, the homestead entries, the certificates to railroads, and the approvals under the swamp-land laws have increased, the sales for cash have diminished.

The financial results of the General Land Office operations being quite important to the treasury, the strictest methods of responsibility are adopted to prevent any loss to the Government. It is believed that our system of checks and balances is such as to secure the most economical administration practicable of the public funds arising from the transfer of the landed estate to private ownership. The decrease of revenue from this source, though inviting attention, is, under the circumstances, comparatively a matter of no serious concern, because resulting from the greater appreciation of the liberal features of our landed policy by the uncaptialized classes for whose benefit these provisions were specially drawn.

The relation of the Government to society in this matter is only that of a trustee. In its fiduciary responsibilities, growing out of the trust imposed, the raising of a revenue has much the smaller scope. The enlargement of this idea to the injury of more extensive and vital interests would be extremely injudicious. It would be unwise financial economy to administer this trust in such a manner as to raise a million or so more of dollars, if this involved the necessity of impeding the settlement of the public domain by raising the price, or by withdrawing any of the present facilities for their appropriation which the law holds out to the humblest industry.

The annual increase of proceeds of internal taxation and of duties upon foreign imports secured by a growing civilization would far transcend any enlargement of revenue from the sale of lands that might be secured by abolishing the liberal and beneficent features of our public land system. But the increase of public revenue is but a slight exponent of the higher functions of this noble system. The enlargement of the area of civilization and the inexpressible relief which has been afforded to the crowded millions of European society, groaning under the evils of a state of transition from feudalism to civil and religious freedom, can be measured by no aggregates of financial value created. The intellectual and spiritual activities of the human soul developed by the extension of free society transcend all moneyed standards. It should be sufficient if, in the management of this trust, the public land system should pay its own expenses without imposing a tax upon the property of the American people. The foregoing statements indicate a still greater acceleration

in the process of settling and civilizing the North American Continent. The increase in the homestead settlements is especially indicative of the increase of smaller freeholds. Of the cash sales and military bounty-land warrant locations, a very large proportion have been made under the preëmption law, awarding tracts not exceeding 160 acres to parties actually occupying and settling the same. The lands already certified to railroads, it is known, have, to a considerable extent, been sold to purchasers in small tracts, exhibiting the prevailing tendency of our social system to the subdivision of land proprietorship. It was obvious last year that temporary causes had for several years previous been stimulating and enlarging the westward movement of our population, producing an increased appropriation of the public lands by private parties. Since then the appreciation of our national securities, the rapid decrease of our public debt, and the relief of the tax-paying part of the nation from an immense burden of taxation, together with good crops throughout the agricultural districts, have very considerably lightened the pressure of financial distress which constrained the westward movement of our population; yet, from the increased appropriation of the public lands during the past fiscal year under the preëmption and homestead laws, we recognize the continuance of that movement in greater force than ever.

A very large and important element in this influx of population into the public domain is from Europe—Germany, the British Isles, and the Scandinavian Peninsula being the leading countries from which it comes. It is in place here to renew the testimony of this office last year in favor of the noble policy of naturalization which has given to this nation its magnificent career of development. The United States is the favorite land of the emigrant. Other countries present equal attractions in the natural advantages of soil, climate, and position, but have never yet attracted immigration. The thinly populated regions of the Crimea, the north shore of the Black Sea, the valley of the Danube, Algiers, Mexico, Central and South America, all present especial advantages to the emigrant. Canada lies in much closer proximity to Europe, offering advantages for settlement to its northern races, perhaps, equal to those of some of our Northwestern States; but in spite of every effort of the British Government, the large majority of the immigrants directed to this point are soon attracted to the more genial nationality of the United States of America. The reason of this preference is found in the freedom of our political and social systems, and the superior development of natural resources which that freedom secures. Our Government confines itself to the narrowest limits consistent with the maintenance of public order. It everywhere causes its influence to be respected, not as the master, but as the servant of the people. It thus appeals to the self-reliance of the citizen, calling forth all his latent energies, the exercise of which upon the obstacles of external nature do not fail to result in the accumulation of wealth and in the development of personal independence of character. Our policy thus unmasks those immense capabilities of human nature which in the Old World are overlain by caste and proscription, utilizing what would otherwise either go to waste or remain paralyzed in chronic inaction.

The value of foreign immigration to this country has been estimated from a purely financial point of view with very remarkable results. In my last report it was mentioned that an estimate had been made of the average sum of money imported by each foreign immigrant at \$68 per capita. It is now believed by parties more thoroughly conversant with the facts that this estimate is entirely too small, being founded on a very imperfect range of inquiry. One of the New York commissioners

of immigration estimates the true average at \$150 per capita, making the amount received from the 250,000 immigrants arriving at the port of New York in 1869 to be \$37,500,000. It is not at all improbable that the aggregate contribution to the cash capital of the nation since the inauguration of our naturalization policy will reach a thousand millions of dollars.

But the money brought into the country by the immigrant is a small part of the financial value he has added to the country. This question of the economic value of the immigrant has been treated with considerable ingenuity by late writers. An intelligent and comprehensive estimate is found in the able treatise of Dr. Engel, of Berlin, director of the Prussian Statistical Bureau, on the price of labor. This writer distinguishes three periods in the economic life of man, two unproductive and one productive.

The first comprises the years of childhood and education up to the fifteenth year. The productive period of fifty years, from fifteen up to sixty-five, is fraught with the economic results of the entire lifetime. The subsequent period brings but small additions to these results. The accumulations of the active period, in a true adjustment of the economic forces of society, should be sufficient to meet the expenses of the prior state of pupilage, to maintain the productive power of the physical and intellectual machinery by a proper outlay, and, finally, to accumulate a sufficient surplus to meet the wants of the period of decline. The writer referred to estimates that in Germany the cost of raising a manual laborer for the first five years of his life is 40 thalers per annum; for the next five years, 50 thalers per annum; and for the next five years, 60 thalers per annum; amounting to 750 thalers. Mr. Kapp, in applying these estimates to America, considers that in this country the aggregate cost is about double what it is in Germany, making the average expense of raising and educating an American unskilled laborer 1,500 thalers, almost equal to \$1,500 in currency. The cost of the female laborer he places at about \$750, or one-half the cost of the male. The value of the immigrants, then, is to be estimated at the cost of raising native laborers.

About one-fifth of the immigrants are under fifteen, but this deficiency is more than compensated by the immense preponderance of the males over the females. But averaging the cost, by equalizing the proportion of males and females, we have a final estimate of \$1,125 as the average economic value of immigrants to this country; and we can easily arrive at the conclusion that the additions of value created by foreign immigration amount to at least five billions of dollars, or more than double of what remains of our national debt. The total annual immigration being about 300,000 per annum, the aggregate resulting benefit is not less than \$400,000,000, or a million of dollars per day. In the report of last year were presented statistics to show that at least one fourth of the present population is due to the influx of foreigners. The readiness with which they have adapted themselves to the requirements of our democratic civilization is an ample justification of the policy of naturalization.

But a feature of the case which should not be neglected in an estimate of its advantages is found in the wonderful progress which has been made in the disposal of the public domain—a progress which could never have been realized had the increase of our population been confined to the excess of births over deaths from the commencement of our history.

The grand total area of our public domain from its organization is

1,834,998,400 acres. Of this amount there had been disposed of under the land laws, up to June 30, 1870, 447,266,190.16 acres, leaving still in possession of the Government 1,387,732,209.84 acres. The rate of annual disposal is increasing, and must increase still more rapidly as the public surveys are extended to enable claimants to designate the legal subdivisions located upon the soil. Of the 198,165,794.67 acres which will inure to railroads and wagon roads, under the various grants of Congress, title had passed to only 23,430,270 acres up to the 30th of June last, leaving 174,735,524.67 acres which will soon be demanded by the beneficiaries. If twenty years should elapse before the last of these donations be certified or patented this item alone will require an annual disposal of public lands fully equal to the entire operations of the land offices and of this office at present. When we take into consideration the swelling tide of immigration and the increased rapidity, in all other departments, of appropriation of the public lands, we can reasonably anticipate a large increase over the present annual rates.

THE NATIONAL DOMAIN—HISTORICAL OUTLINE.

The term public domain is generally used in its widest sense, embracing the total area of the public-land States and Territories, the jurisdiction of which, as well as the title to the soil, once resided in the General Government.

According to the statement in the foregoing, and heretofore reported, the aggregate area of the public lands of the United States on the 30th of June, 1870, was 2,867,184.74 square miles, or 1,834,998,400 acres. This, however, embraces only that portion of the public domain coming under the jurisdiction of the General Land Office. The territory now included within the limits of Tennessee, according to the terms of the above definition, was as substantially a portion of said domain as Ohio or Indiana, yet the public lands in Tennessee were not disposed of under the direction of the executive department of the General Government, and hence have not been embraced in our annual reports. If the area of Tennessee, 45,600 square miles, or 29,184,000 acres, were added to the areas of the public lands officially reported, the aggregate actual surface would be 2,912,784.74 square miles, or 1,864,382,223 acres.

This territory was acquired by the Government, first, by cessions from States in the Union, and, second, by treaty with foreign powers.

By the definitive treaty of peace with Great Britain, concluded September 3, 1783, our national territory was defined as extending westward from the Atlantic to the Mississippi River, and from a line on the north of the lakes to the thirty first parallel, and the south boundary of Georgia, embracing 830,000 square miles, or 531,200,000 acres. Of this area 341,756 square miles, or 218,723,840 acres, were included in the thirteen original States constituting the American Union. Kentucky, Vermont, and Maine were subsequently erected out of territory claimed respectively by Virginia, New York, Massachusetts, and New Hampshire, by virtue of grants from the British Crown prior to the Revolution. These States embrace 82,892 square miles, or 53,050,880 acres. The remainder of our original territory, including 405,352 square miles, or 259,425,280 acres, was held by Massachusetts, Connecticut, New York, Virginia, North Carolina, South Carolina, and Georgia, under grant from Great Britain, during their colonial condition. These territorial interests were surrendered to the general government of the Union by the last-named States at different times subsequent to July 4, 1776, and constituted the nucleus of our public domain. Those interests cover

the entire surface of the States of Ohio, Indiana, Illinois, Michigan, Wisconsin, and Tennessee, that part of Minnesota lying east of the Mississippi River, and all of Alabama and Mississippi lying north of the thirty-first parallel. In order to trace the chain of title by which the United States now hold these lands it will be necessary to review briefly the charters granted by the Crown to the different colonies. This is by no means of easy accomplishment, owing mainly to two causes: first, the ignorance, in the early history of this hemisphere, of the chorography of the North American Continent in those who drew these charters, and, secondly, a disregard on the part of English sovereigns of prior grants of the same territory. Serious conflicts of title and popular commotions, resulting in some cases in violence and bloodshed, grew out of these overlapping grants, indicating complications and obscurities sufficient to excuse misapprehension in early historians and publicists.

The first efforts to colonize our continent by the English were made under the reign of Elizabeth; patents were granted to Sir H. Gilbert, Sir Walter Raleigh, and others, authorizing settlements upon territories not actually in possession of any prince in alliance with the Queen, yet all attempts at settlement under these charters proved abortive; the Tudor dynasty passed away and several years of the first reign of the Stuarts had elapsed before the Anglo-Saxon race had gained a permanent foothold on this continent.

In 1606 James I, on application of Sir Thomas Gates, authorized the establishment of two colonies, named, respectively, the first and second colonies of Virginia. The first enterprise was confided to a corporation of citizens of London, and is often historically referred to as the "London Company." The territorial grant of the first colony covered a strip of sea-coast fifty miles broad, extending from the thirty-fourth to the forty-first parallel, with all the islands within one hundred miles of the shore. No settlements in the rear of these limits were to be permitted, except upon written license from the colonial council. To the second colony, consisting of citizens of the city of Plymouth, and hence called the "Plymouth Company," was assigned the tract between the thirty-eighth and forty-fifth parallels. The territory between the thirty-eighth and forty-first parallels was then embraced in both charters, but conflict of jurisdiction was avoided by providing that neither colony should establish a settlement within one hundred miles of any actual occupancy of the other.

This belt of three degrees, then, constituted debatable ground, the jurisdiction of which was to be determined by prior settlement. A noble provision in these charters excluded all feudal tenures, and required all the lands to be held in free and common socage, as in the English county of Kent. To this exclusion of tenancies *in capite*, or by knight's fees, as in England, we may trace that liberalization of American civilization which finally surmounted all the legal superstitions of feudalism and culminated in the fundamental axioms of freedom which found such logical expression in the Declaration of Independence. The long delay in the occupancy of the American wilderness by a civilized population is now seen as an element of untold advantage to the cause of liberty and progress. The very difficulties of colonization compelled the English government to multiply the attractions, especially by liberalizing the land tenures. The democratic principle being thus firmly fixed in the social organism, we have no difficulty in tracing its revolutionary influence upon political institutions.

The attempts at settlement under the charter to the first colony of

Virginia proving failures, King James, in May 1609, granted a charter incorporating the London Company, under the title of "The Treasurer and Company of Adventurers and Planters of the City of London for the First Colony of Virginia." The territorial limits of the colony were extended to embrace the whole sea-coast north and south within two hundred miles of Old Point Comfort, extending "from sea to sea, west and northwest," and also "all the islands within one hundred miles along the coast of both seas of the precinct aforesaid," evidently meaning the Atlantic and Pacific Oceans. Under this enlarged charter the first permanent settlement was made in 1611. In 1624 this charter of the first colony of Virginia was vacated by the court of King's Bench and its government confided to a royal commission. The company was soon dissolved, sinking £120,000 in the enterprise. In 1625 Charles I issued a proclamation alleging the judicial repeal of the charter and transformed the colony into a royal province. The chartered limits of the colony were subsequently reduced by including successive portions of it in other colonies. The territory of Maryland, Delaware, and North Carolina, with parts of Pennsylvania, New Jersey, South Carolina, and Georgia, were originally included in the jurisdiction of the London Company. The residuum of the original territory of the first colony of Virginia was claimed by the State of Virginia at the breaking out of the revolutionary war.

For several years after the permanent settlement of the first colony, the second Plymouth Company was unsuccessful, and finally became discouraged in regard to the establishment of colonies within its chartered limits. In November, 1620, the King, James I, granted a new charter to this company, reiterating the grants previously made, and designating the extreme territorial limits as the fortieth and forty-eighth parallels, "from sea to sea." This territory was named New England, and placed under the government of the "Council of Plymouth."

A number of Puritans, having been driven from England by the persecutions inflicted upon them during the reign of Elizabeth, had settled at Amsterdam, in Holland. Failing to obtain from James I a relaxation of the persecuting policy, they determined to seek an asylum in the wilderness of North America, and first directed their attention to the valley of the Hudson. After tedious negotiations with the London Company for a settlement within the limits of the first colony of Virginia, they finally obtained a patent for a tract of land, but without explicit assurance of security in the rights of conscience. After some hesitation, they embarked their first company of emigrants upon the Mayflower at Delft Haven, and in November, 1620, the Pilgrims were landed at the present site of Plymouth. The place of their landing being outside the limits of the first colony of Virginia, their patent from the London Company was useless, and they were compelled to settle upon the territory of the northern colony, trusting to circumstances for legal authority. From this settlement arose one of the noblest reorganizations of society by colonization that history records. Overcoming herculean difficulties of climate and soil, the colonists achieved within the following decade such a measure of success and substantial progress that the Plymouth Company was induced, in spite of aristocratic and ecclesiastical prejudices, to grant them a charter in January, 1630, covering a tract lying between the Cohasset and Narraganset Rivers, and extending westward "to the utmost bounds of a country in New England called Pokanoket, alias Sowamset." The grant embraced also a tract lying fifteen miles wide along each side of the Kennebec River, which was subsequently incorporated with the province of Maine.

In March 1628 the council of Plymouth sold to Sir Henry Roswell, Sir John Young, and four associates, a patent for that part of New England lying between the parallels passing through points three miles north of the mouth of the Merrimack and three miles south of the mouth of Charles River, extending westward to the Pacific. This territory, called Massachusetts, from the Indian name of a bay upon its coast, was settled by English Nonconformists, who purchased rights under the patent to the Massachusetts company. On the petition to this company, seconded by the influence of Lord Dorchester, Charles I, in March 1629, confirmed the grant of the Council of Plymouth to Roswell and his followers, with the assignments that had been made under it, in a charter incorporating the colony under the name of "The Governor and Company of Massachusetts." In 1684, during the brief tyranny of James II, the Court of King's Bench, upon a writ of *quo warranto*, vacated the charter of Massachusetts and the prior grant to Roswell and his associates, with all the assignments under which it had been made. But after the accession of William and Mary, October 1691, a new charter was issued, consolidating the colonies of Massachusetts Bay, New Plymouth, Maine, Arcadia, Nova Scotia, and the territory intervening between the two last mentioned, into a single colony under the name of Massachusetts Bay. The province of Arcadia was ceded to France by the treaty of Breda, in 1667, and the transfer acknowledged by the treaty of Ryswick, in 1697. On its restoration to England by the treaty of Utrecht, in 1712, it became a distinct province, with the line of the St. Croix for its western boundary, and it now constitutes the provinces of New Brunswick and Nova Scotia.

The history of Maine presents some remarkable variations of boundary. In 1622 the Council of Plymouth granted to Sir Fernando Gorges and Capt. John Mason, jointly, the lands lying between the Merrimack and Kennebec Rivers, under the name of Laconia. In November 1629 the Council of Plymouth gave to Captain John Mason a charter covering that portion of the above-described colony of Laconia situated between the two lines, each sixty miles long, traversing the entire length of the Merrimack and Piscataqua Rivers, and joined at their inland extremities by a straight line. In 1631 Gorges, Mason, and others obtained another charter to a portion of Laconia lying on both sides of the Piscataqua. At some period prior to the dissolution of the Plymouth Council in 1635, Gorges had obtained from it a charter covering all that part of Laconia lying east of the Piscataqua, which was confirmed by the King in 1639, four years after the dissolution of the council. The remaining area of Maine had been patented to two other parties in two separate tracts, thus dividing the entire province between three patents and consolidating a number of minor grants. No evidence is presented of any occupation of the soil under the patents of the two parties above referred to. The council had also, prior to its dissolution, consented to a grant by the King to Sir William Alexander, covering the territory east of the St. Croix and south of the St. Lawrence.

Gorges, engaging in the civil war on the royal side, was taken prisoner by the parliamentary forces, and thus compromised his rights under the republican régime that followed. The province suffered on the withdrawal of his authority, especially after his death in 1649, from the factious intrigues of ambitious demagogues. The loss and suffering thus entailed inclined the colonists to accept the claim of jurisdiction which Massachusetts began to urge in 1652. This claim was founded upon a new interpretation of the limits of the grant from the Council of Plymouth to Roswell and his associates in 1628. The northern bound-

ary was, by this construction, not the parallel passing three miles north of the mouth of the Piscataqua, but that passing three miles north of its source, or $43^{\circ} 43'$ north latitude, which strikes the Atlantic coast at Casco Bay. During the following year Massachusetts employed skillful mathematicians to make out this new boundary. In 1658 the new line had been generally recognized in the inhabited districts; but in 1664 the King, by letter, ordered the restoration of the province to the heirs of Gorges. In defiance of this order, Massachusetts, in 1666, resumed the government of the province, and in 1668 sent four commissioners, with a troop of horse, to enforce her authority. In 1677 the two lords chief justices of King's Bench and of common pleas, to whom this question had been referred, decided adversely to the claim of Massachusetts, the initial point of her northern boundary being fixed three miles north of the mouth of the Merrimack. The agents of Massachusetts purchased the claims of the heirs of Gorges, anticipating the overtures of the King himself for the same purpose. The claim of Massachusetts, being then generally recognized, was, by the charter of William and Mary, in 1691, definitely legalized. Maine retained this status as a district of Massachusetts up to the time of her admission, in 1820, as a State of the American Union.

That portion of Laconia west of the Piscataqua, not having been purchased by Massachusetts, was not thereafter a portion of that province. In 1679 the King ordered a commission for organizing this territory into a separate government, under the name of New Hampshire. In 1740 a tedious controversy in regard to its south boundary was settled by the lords in council, whose decision, approved by the King, fixed it along a line following the meanderings of the Merrimack at three miles distance on the north side, from its mouth to the falls of the Pawtucket, "and thence due west to meet the other royal governments."

The charter of 1691 made Massachusetts coterminous on the south with the colonies of Connecticut and Rhode Island. The colonies were erected within the limits of a grant from the Council of Plymouth, in 1630, to its president the Earl of Warwick, and by him, in 1631, transferred to two English lords, Say and Seal and Brooke. Its limits were described with an ambiguity and obscurity of expression remarkable even in those days of rude description and want of geographical knowledge, and laid the foundation for serious conflicts of title in after years. They included all that part of New England west of the Narraganset River, extending "the space of forty leagues upon a straight line near the sea shore, toward the south and west, as the coast lieth toward Virginia, accounting three English miles to the league; and also all and singular the lands and hereditaments whatsoever lying and being within the lands aforesaid, north and south in latitude, and in breadth and length, and longitude of, and within all the breadth aforesaid, throughout the main lands there from the Western Ocean to the South Sea."

This territory was settled by several independent communities or colonies, which, by the charter of Charles II, in 1662, were consolidated into a single colony by the name of "The Governor and Company of the English Colony in Connecticut in America." The colony of New Haven, included in this charter, refused to submit to the arrangement till 1665. The territory of this consolidated colony was designated as extending from Narraganset Bay to the Pacific, and from the line of Massachusetts plantations southward to the sea coast, including the adjacent islands. The present boundary was finally settled by agreement in 1713. From this broad area Connecticut was destined to sub-

mit to several extensive deductions. In 1643 the Earl of Warwick, who had been appointed by the Parliament lord high admiral of England, with a council of five peers and twelve commoners, granted to "The Incorporation of Providence Plantations in the Narraganset Bay in New England" a tract covering the eastern portion of the Connecticut claim, bounded north and east by Massachusetts and Plymouth Colonies, and west by the Narraganset Indians, the whole tract extending about twenty-five English miles into the Pequot River and country." This grant, by inadvertence, was entirely ignored in the Connecticut charter of 1662, which included all this country; but in 1663 a new charter was granted to Rhode Island and Providence Plantations, the Connecticut charter being recalled until the boundary between them should be settled. During the same year the line of the Pawcatuck was agreed upon as the boundary between Rhode Island and Connecticut. This charter, with those of the other New England colonies, was abrogated in January 1687, by Governor General Sir Edmund Andross; but in May 1689 the people of Rhode Island, accepting the English revolution of 1688, resumed their rights under the charter, which continued in force as the organic law of the colony and afterward of the State of Rhode Island till superseded by a regular State constitution in 1842. The territorial claim of Connecticut in its westward extension was again trenched upon by the charters of New York and Pennsylvania. The claims of the former date back to the charter of 12th March, 1664, granted by Charles II to his brother, the Duke of York, afterward James II, which, after the final subversion of the Dutch government of New Netherlands, was renewed. The limits of this grant are sketched in geographical ignorance and disregard of prior rights which meet us at periods of our colonial history. With a large territory now included in the State of Maine, it covered Long Island and all the lands between the Connecticut River and the eastern shore of Delaware Bay. The Dutch occupancy of fifty years was treated as an intrusion upon the rights of the Crown, offering no bar to this reckless and prodigal endowment. These lands were granted to the duke in free and common socage, with a yearly rent. The rights of eminent domain, subject to the sovereignty of the King, went with the land grant. A royal commission, in November 1664, determined the boundary between New York and Connecticut along the line of the Mamaroneck, but in 1731 the present boundary was fixed by agreement of the two colonies. Thus New York absorbed the westward extension of the Connecticut territory north of the forty-first parallel and east of the Delaware River.

By agreement with Massachusetts in 1787, under the confederation, the present boundary line was acknowledged and the conflicting claims of the two colonies to the westward compromised by admitting the territorial sovereignty of New York and assigning to Massachusetts the title to the soil north of the forty-second parallel and west of the meridian passing eighty-two miles west of the northeast corner of Pennsylvania. North of Massachusetts, New York still claimed the territory as far east as the Connecticut River, under the grant to the Duke of York. New Hampshire asserted a right as far westward as the line of Massachusetts, and gave extensive grants of land west of the Connecticut. This produced a collision between the authorities of New Hampshire and New York, which was finally terminated by the royal order of July 1764, designating the Connecticut River as the common boundary of the two colonies. The inhabitants of the disputed territory, till then known as "the New Hampshire grants," did not object to the political jurisdiction of New York, but the effort to oust holders of land

under grants from the authorities of New Hampshire provoked resistance which was never suppressed. Finally, in 1790, New York relinquished her claims, and Vermont was admitted to the Union on the 4th of March, 1791, with her present boundaries.

That portion of the territory claimed by Connecticut between the forty-first and forty-second parallels and west of the Delaware River was intercepted by the charter which Charles II in 1681 granted to William Penn, constituting him proprietary and governor of the province of Pennsylvania. The outline of this grant was magnificent and far more definite than the previous efforts at defining colonial boundaries. It included "all that tract or part of land in America, with the islands therein contained, as the same is bounded on the east by the Delaware River, from twelve miles distance northward of New Castle Town unto the three-and-fortieth degree of northern latitude, if said river do extend so far northward; but if the said river shall not extend so far northward, then by the said river so far as it doth extend, and from the head of the said river to the eastern bounds are to be determined by a meridian line to be drawn from the head of said river unto the said forty-third degree. The said land to extend westward five degrees in longitude, to be computed from the said eastern boundary, and the said lines to be bounded on the north by the beginning of the three-and-fortieth degree of northern latitude, and on the south by a circle drawn at twelve miles' distance from New Castle northward and westward unto the beginning of the fortieth degree of northern latitude, and then by a straight line westward to the limits of longitude above mentioned."

It should be observed that the geographers of that day considered degrees of latitude as zones taking designation from their northern parallels; hence the north boundary of Pennsylvania, designated as the beginning of the forty-third degree, is really the forty-second parallel. The south boundary, being the beginning of the fortieth degree, was really the thirty-ninth parallel, a construction for which Penn earnestly contended in his disputes with Lord Baltimore in relation to the boundary between Pennsylvania and Maryland. Proud, in his "History of Pennsylvania," states the length of the colony at five degrees of longitude, or two hundred and sixty-five miles, on the forty-first parallel.

The Duke of York, soon after receiving his charter for the province of New York, granted to Lord Berkeley and Sir George Carteret the territory contained within the present limits of New Jersey, the grant embracing powers of government as well as title to the soil. To Cecil Calvert, Lord Baltimore, King Charles I, in 1632, granted a charter constituting him lord proprietary of the province of Maryland, with territorial jurisdiction, including the country between the fortieth degree of latitude on the north and the Potomac on the south, with an eastward projection of the southern boundary across the peninsula flanking the Chesapeake Bay to the Atlantic.

In the disputes on boundary with Penn, Baltimore contended for the modern meaning of the word latitude, which would carry his grant to the fortieth parallel. The controversy was settled by the location, in 1767, by Mason and Dixon, two eminent English surveyors, of the celebrated line which bears their names.

In 1682, by two deeds of feoffment, the Duke of York, afterward James II, made over to William Penn his proprietary interest in the territory then denominated the three lower counties on the Delaware. After fruitless efforts to incorporate them with Pennsylvania, they were

made a separate colony, subsequently called Delaware. As the territory lay within the limits claimed by Maryland, James II ordered that that portion of the peninsula lying between the fortieth parallel and the parallel of Cape Henlopen should be equally divided between the two colonies. By the agreement of the heirs of Penn and Baltimore, made in 1732, from the middle point of the parallel of Henlopen a tangent was drawn to the circle around Newcastle, and made the line of separate jurisdiction. This tangent was continued northward to a point fifteen miles south of Philadelphia, through which Mason and Dixon's line was subsequently run.

The limits of the first colony of Virginia, as defined by the second charter, issued in 1609, embraced four hundred miles of sea-coast, of which the central point was Old Point Comfort, with a westward extension to the Pacific, between the parallels passing through these extreme points. Of this territory portions were included, as above detailed, in the colonies of Maryland, Delaware, and New Jersey. The Virginia charter having been judicially vacated, there remained no legal obstacle to further dismemberment of the territory.

In 1663 Charles II granted to Lords Clarendon, Albemarle, and others the zone between the parallels 31° and 36° from the Atlantic to the Pacific, to be called the colony of Carolina; the grant embracing both title to the soil and political jurisdiction, subject to the sovereignty of the Crown. Two years afterward, to wit, 1665, this domain was enlarged by another charter, fixing the limits of the zone granted at the parallels of 29° and $36^{\circ} 30'$. The southern boundary trenched upon the province of Florida, held by the Spaniards. This claim, however, the English authorities disputed, alleging prior discovery.

In 1729 the Parliament of England purchased the proprietary interest of seven of the eight lord proprietors and transformed the colony into a royal province. It was then divided into two provinces, denominated, respectively, North and South Carolina. By the charter of June 9, 1732, the colony of Georgia was constituted, and to it was granted all the territory between the Savannah and Altamaha Rivers, with the zone included between the parallels passing through their headwaters and extending westward to the Pacific.

By proclamation of George III, dated October 7, 1763, all the lands between the Altamaha and the St. Mary's Rivers were annexed to the colony. Again, George III, in commissioning James Wright as Governor of Georgia, in January 1764, defined its jurisdiction as covering all the lands between the Savannah and the St. Mary's, and between the parallels passing through the headwaters of the former and the north boundary of East and West Florida, which extended along the St. Mary's to its headwaters, thence by a direct line to the confluence of the Chatahoochee and Flint, thence up the Flint to the thirty-first parallel, and thence, by said parallel, to the Mississippi River. The thirty-first parallel was made the north boundary of West Florida, in compliance with a recommendation in 1764 of the British Board of Trade, as shown by royal commissions to Governors Elliot and Chester, of West Florida, dated, respectively, May 15, 1767, and January 25, 1770.

This brief resume of the chartered claims of the different colonies will facilitate an understanding of the cessions made by each particular State subsequent to the Declaration of Independence. It will be observed that these grants from the Crown were frequently in conflict with and overlapped each other. Not only a want of geographical knowledge, but a disregard of prior grants, often led the capricious mind of the Stuart dynasty to annul their own solemn public acts, and to ignore

rights acquired under those acts. After the revolution of 1688, the royal prerogative having been limited, we find no more of such interference with chartered rights by royal authority. The Parliament, having become supreme in the state, subsequently assumed some of the prerogatives wrested from the Crown, and finally precipitated the revolutionary war by claiming the right of taxation without representation. The successful result of that war left to the colonies a variety of territorial claims. These claims, in accordance with an earnest recommendation of Congress, were at different times ceded to the United States.

The first in the patriotic movement was New York; on the 1st of March, 1781, her delegates in the Continental Congress, James Duane, William Floyd, and Alexander McDougall, in a deed reciting the authority given them by act of the legislature, restricted the jurisdiction and right of preëmption to the present lines of the State, and quitclaimed the residue, if any, of her territorial claims to the General Government for the benefit of all the States that were at that time, or that should thereafter become, parties to the Union then subsisting under the articles of confederation. The original charter to the Duke of York covered only the lands between the Connecticut River and the eastern shore of Delaware Bay. New Jersey, embracing that portion of this grant subsequently transferred to Berkeley and Carteret, was separated from New York by a line running from the forty-first parallel on the Hudson River to the parallel of $41^{\circ} 40'$ on the Delaware River. The line between New York and Pennsylvania, commencing at the last-named point, followed the Delaware to the forty-second parallel and continued along that parallel westward to its intersection with meridian passing twenty miles west of the Niagara River, and northwardly along that meridian to the international boundary.

The next cession was made by Virginia, on the 1st of March, 1784, through her delegates in the Continental Congress, Thomas Jefferson, Samuel Hardy, Arthur Lee, and James Monroe. She still claimed the residue of territory originally granted to the first colony of Virginia, after deducting the lands covered by the charters of Delaware, New Jersey, Maryland, Pennsylvania, and North Carolina, westward to the Mississippi River. This embraced, in addition to the present States of Virginia and West Virginia, Kentucky, and all of Ohio, Indiana, and Illinois south of the forty-first parallel. She set up an additional claim to the territory northwest of the Ohio River, founded upon the successful expedition of a detachment of her State troops, under General George R. Clarke, by which the British power was practically subverted. Consenting to the erection of Kentucky into an independent State, she ceded all her territorial claims northwest of the Ohio with certain restrictions.

On the 9th of April, 1785, Massachusetts, through her delegates in Congress, renounced all territorial claims west of a meridian passing twenty miles west of Niagara River, the west boundary of New York already mentioned.

Connecticut, on the 3d of September, 1786, through her delegates, yielded both soil and jurisdiction west of the meridian passing one hundred and twenty miles west of the west boundary of Pennsylvania. On the 30th of May, 1800, by deed executed by her Governor, Jonathan Trumbull, she ceded the right of eminent domain over the intervening territory, but retained the right of disposal of the soil. This territory embraced a zone between the forty-first parallel and Lake Erie.

On the 9th of August, 1787, South Carolina ceded all her territorial claims west of her present boundaries. By previous adjustment of the

conflicting claims of Georgia, the public lands which South Carolina had to cede were reduced to a strip twelve miles wide skirting the south line of North Carolina and Tennessee, or the parallel of 35° , westward to the Mississippi.

On the 25th of February, 1790, North Carolina transferred all her chartered rights of "sovereignty and territory" over the zone included between the parallels of 35° and $36^{\circ} 30'$ as far west as the Mississippi, then the international boundary line; this territory now constitutes the State of Tennessee.

On the 16th of June, 1802, Georgia ratified an agreement previously drawn up by her commissioners and the General Government, whereby her public lands west of her present boundaries became a part of the public domain. She received in turn that portion of the South Carolina cession lying within her present boundaries, thus adding a strip twelve miles wide to her northern frontier and making her coterminous with North Carolina and Tennessee.

These cessions were accompanied, however, in some cases by important reservations. The last district ceded by Connecticut, having been excluded from the first cession of that State, was called the Western Reserve, a title by which it is still known in Ohio. It covers a tract of land one hundred and twenty miles long, extending from Lake Erie to the forty-first parallel, and containing 3,800,000 acres. About 500,000 acres of the western portion of this tract were donated by the State of Connecticut to certain of her citizens who had suffered by fire and depredation in the revolutionary raids of British partisans. These lands were, from this circumstance, called the "Fire Lands." The remaining portion of the Western Reserve was sold by Connecticut, and the proceeds applied to constitute that common school fund which has enabled this State to stand in the front rank of educational enterprise.

Virginia stipulated that a quantity of lands, not exceeding 150,000 acres, should be laid off in one tract, the length of which should not exceed twice the breadth, to satisfy the claims of General George R. Clarke and the officers and soldiers composing his celebrated expedition to the Illinois region. This tract, according to the terms of the reservation, was selected and located near the Falls of the Ohio, and distributed among the claimants according to the laws of Virginia. It was further stipulated in this cession that in case the lands in Kentucky, between the Green and Tennessee Rivers, which had been reserved to meet the land bounty claims of the Virginia revolutionary officers and soldiers under her laws should prove inadequate, the deficiency should be supplied in good lands to be selected and surveyed by the claimants themselves in a district allotted them on the north side of the Ohio River and between the Sciota and Little Miami Rivers. This loose method, and the entire absence of public monuments of survey in the "Virginia military district," was necessarily productive of many conflicts of title, requiring a long course of litigation to settle and seriously retarding the growth of civilization. After a quarter of a century, however, titles became measurably quieted and the march of improvement was accelerated. This district embraces a fine body of 6,570 square miles, or 4,204,800 acres, now one of the "garden spots" of the continent.

The reservations of North Carolina present a singular chapter in this history of the public domain. Among the conditions of transfer it was stipulated that three classes of claims should be satisfied from the public lands ceded by that State before any other disposition should be made of them. These reservations were as follows: 1st. Appropriations of land by the State of North Carolina to her continental and

State officers and soldiers, each claimant to select and lay off his legal complement in such locality as he might choose, without reference to any public standards of survey. 2d. Grants of lands, whether located upon the soil or not, made to individuals under the laws of the State, including all inceptive or perfected rights, whether acquired by formal entry, by actual occupancy, by preëmption privilege, or by special reservation. 3d. Entries under the law of 1783, in the office of one John Armstrong, an entry taker, whose legal status it is not easy now to ascertain, conflicting with prior claims; such entries were to be relocated upon unappropriated lands elsewhere.

By a report made to Congress, November 10, 1791, by Thomas Jefferson, Secretary of State, it appears that the Indian title within the ceded territory had been extinguished to about 7,500,000 acres, whereas the claims already reported amounted to 8,118,601½ acres, many of them located within the limits guaranteed to the Cherokees and Chickasaws by the treaties of Hopewell and Holston.

The General Government, by treaty, purchase, or conquest, extinguished, at different times, the Indian title to the remaining lands in Tennessee, but the North Carolina claims absorbed the great mass of the eligible lands. Finding that the remnant would scarce pay expense of administration, Congress, by act of February 18, 1841, made Tennessee its agent for the disposal of all unappropriated lands within the State, granting as a recompense any surplus after satisfying the North Carolina claims.

By the above-cited acts of several of the thirteen States originally constituting the American Union, the General Government came in possession of all that portion of the public domain lying east of the Mississippi and north of the thirty-first parallel. The basis of the claims of these States, as given in the foregoing, it will be seen, was the grants from the Crown of England. The power of the King thus to constitute new provinces, and subsequently to annul chartered privileges, involves constitutional questions, under the system of laws then subsisting, with which it would be presumptuous now to grapple. It should, however, be mentioned in this connection that George III, by proclamation of 7th October, 1763, organizing the territory acquired from France by the treaty of Paris of February 10, 1763, into four new governments, reserved for the use of the Indians all land and territories not included in those governments, or within the limits of the Hudson Bay Company, "as also all lands and territories lying to the westward of the sources of the rivers which fall into the sea from the west and northwest, as aforesaid; and we do hereby strictly forbid, on pain of our displeasure, all our loving subjects from making any purchases or settlements whatever, or taking possession of any of the lands above reserved, without our special leave and license for that purpose first obtained." The fact that the King felt himself bound to appeal to the courts and to vacate the charters of Virginia and Massachusetts by writs of *quo warranto*, would seem to indicate that in that day the royal prerogative, even in the estimation of the Stuart dynasty, did not embrace the power of annulling charters. A violation of contract on the part of grantees was made the ground of vacating the charters. George III, however, assumed higher ground, and claimed by mere proclamation, without consulting Parliament, to restrict the territory of the first and second colonies of Virginia, of Massachusetts, and Connecticut, to the watershed of the Atlantic streams, whereas the original charters extended their jurisdiction westward to the Pacific Ocean. By the colonies themselves, however, this proclamation of George III seems to

have been treated as a nullity. Virginia, Connecticut, Massachusetts, New York, North and South Carolina, and Georgia claimed the full quota of territory under their original charters, with the exception, however, of such areas as they, by negotiation, had acknowledged to have been alienated to other colonies. Thus Connecticut and Massachusetts had yielded those portions of their original charters which were covered by the actual settlements of New York and Pennsylvania. But where a right is yielded by diplomacy this concession does not involve the negation of the original right itself. Connecticut, after vainly contending with Pennsylvania in regard to the zone between the forty-first and forty-second parallels, yielded the point under the decision of the court constituted under the articles of confederation, but pressed her claim to the same zone west of Pennsylvania to the Mississippi River.

To many of that day the area acknowledged as ours by the treaty of peace of 1783 with Great Britain, appeared sufficiently broad for the greatest possible expansion of our American nationality, but even then there were minds sufficiently enlightened and progressive to forecast something of that splendid career which we have since partially realized. To such the idea of "an ocean-bound republic" was already unfolding itself. The circumstance which then began to form this idea was the last accession to the public domain consummated ere our foreign acquisitions began.

On the 30th of April, 1803, the year following the cession of Georgia, Napoleon, as First Consul, meditating a rupture with England, ceded to the United States the large, imperfectly-defined province of Louisiana, lest it should fall into the hands of his enemy. The consideration for this cession was that the United States should pay 60,000,000 francs, besides discharging sundry claims of her own citizens against France. This action of the treaty-making power, put forth by an administration committed to the doctrine of strict construction, shows the recognition of power in the General Government in accordance rather with the spirit than the letter of the Constitution.

Louisiana had been claimed by France by right of discovery, La Salle having visited it and discovered the mouth of the Mississippi in 1691. After an abortive attempt at settlement by Iberville, in 1699, it was granted, in 1712, by Louis XIV to M. Crozat, and named Louisiana. Five years later it passed into the hands of John Law and his Mississippi Company, on the financial explosion of which it reverted to the Crown. Transferred to Spain in 1762, it was retroceded by the treaty of San Ildefonso, October 1, 1800.

The boundaries of Louisiana, as ceded by Napoleon to the United States, were indefinite, the treaty itself, according to Chief Justice Marshall, having been couched in terms of "studied ambiguity." Questions of boundary between Louisiana and Florida were involved which require some explanation. By the proclamation of George III, of October 7, 1763, before cited, the province of West Florida was constituted as extending from the Mississippi River on the west to the Appalachicola on the east. During the revolutionary war, in 1778, the British troops in Florida marched into Georgia, capturing Savannah. The Spanish authorities of Louisiana, taking advantage of this disposition of the British forces, organized an expedition to Florida, and had so far succeeded in conquering both East and West Florida, that, upon the general pacification at the close of the revolutionary war, both provinces were retroceded to Spain.

When Louisiana was transferred to us by Napoleon in 1803, it was with the same limits as when France formerly possessed it, and as Spain

possessed it at the time of the treaty of San Ildefonso. Spanish diplomacy, however, found it convenient to consider British occupancy as permanently dissevering West Florida from Louisiana, which it claimed as a new conquest from Great Britain; but the United States, in 1811, took military possession of the country west of Perdido River, thus insisting upon the original limits of Louisiana as claimed by France.

This imbroglio was still further complicated by events on the Florida border during our last war with England, and the reprisals made by General Jackson for the repeated infractions of neutrality by the Spanish authorities. But all grounds of difficulty and all questions of jurisdiction were finally superseded by "the treaty of amity, settlement, and limits," concluded with Spain February 22, 1819. By this treaty the provinces of East and West Florida were ceded to the United States, and the undefined boundary between Louisiana and Mexico was settled as running up the line of the Sabine River to the Red River, thence by the course of that river to the one hundredth meridian, thence north to the Arkansas River, thence following the course of that river to the forty-second parallel, and thence westward to the Pacific Ocean. The northern boundary of the Louisiana purchase, from the Lake of the Woods to the Rocky Mountains, was established along the forty-ninth parallel by the second article of the convention of October 20, 1818, with Great Britain. West of the Rocky Mountains, by treaty of June 15, 1846, with the same power, the international frontier was continued along the forty-ninth parallel to the middle of the channel separating Vancouver's Island from the mainland, and thence through the Straits of Fuca to the Pacific. The United States held an independent claim to that portion of Louisiana called Oregon, based upon the discovery of the mouth of the Columbia River by Captain Gray in 1792. The Louisiana purchase, the limits of which were thus ascertained by tedious and protracted diplomatic litigation, embraced those portions of Alabama and Mississippi south of the thirty-first parallel, the entire surface of the States of Louisiana, Arkansas, Missouri, Iowa, Nebraska, and Oregon, all of Minnesota west of the Mississippi River, all of Kansas except a small corner west of the one hundredth meridian and south of the Arkansas River, all of Dakota, Montana, Idaho, Washington, and Indian Territories, with parts of Wyoming and Colorado.

The annexation of Texas in 1845 led to a war with Mexico, at the close of which, in 1848, by the treaty of Guadalupe Hidalgo, we acquired a large territory from Mexico. Subsequently, by treaty of 1853, another strip, known as the Gadsden Purchase, embracing the Mesilla Valley, was added, in consideration of which, and of the abrogation of sundry stipulations in the treaty of Guadalupe Hidalgo, our Government paid to Mexico \$10,000,000.

These Mexican cessions are now covered by the States of Texas, California, and Nevada, the Territories of Utah, Arizona, and New Mexico, and parts of Wyoming and Colorado. Texas, on entering the Union, stipulated for the possession and disposal of her own public lands. Subsequently, however, by act of November 25, 1850, she accepted propositions from the General Government ceding her claims to reimbursement for the surrender of her military, naval, and revenue establishments, and her lands north of the parallel $36^{\circ} 30'$, and between that parallel and the thirty-second, lying west of the one hundred and third meridian; the consideration of this cession was the payment of \$10,000,000. The ceded lands are now included in Kansas and New Mexico.

The purchase of Alaska from Russia, by the treaty of March 30, 1867, enlarged our public domain to its present dimensions. Russia claimed

this vast territory by right of prior discovery. Captain Behring, who was sent out in 1733 by Empress Ann, discovered the mainland of North America in latitude $58^{\circ} 28'$, on the 18th of July, 1741. His colleague, Captain Tschirikow, being separated from him in a storm, sighted the same coast in latitude 56° , on the 15th of July, 1741, while Behring sailed up the coast, discovering many of the islands of the Aleutian Archipelago, some of which, however, he had seen during his previous voyage in 1728. The coast of British Columbia was discovered in 1790 by Vancouver, upon the strength of which England claimed its sovereignty. The discovery of the coast of Oregon by Captain Gray, in the same year, formed the basis of a claim of our Government to the sovereignty of the whole coast, at least as far north as the Russian discoveries. The line separating us from those discoveries was fixed as the parallel of $54^{\circ} 40'$ in the treaty made with Emperor Nicholas in 1824. The territory between that parallel and the forty-ninth was recognized as belonging to the English, by virtue of Vancouver's discoveries. North of $54^{\circ} 40'$ the claim of Russia seems never to have been questioned. This territory was offered to the United States for a pecuniary consideration during the Crimean war in 1854, by Baron Stoekl, then Russian envoy at Washington, but this offer was declined by the Pierce administration. During the administration of Buchanan unofficial negotiations were set on foot by our Cabinet for the purchase of Alaska, the sum of \$5,000,000 being named as the price, but significant intimations were received that Russia expected a higher price. After the suppression of the rebellion the subject was again agitated in private and official circles. The legislature of Washington Territory, in January 1866, memorialized the President in behalf of the immediate acquisition of the Russian territories of North America. A strong pressure was brought to bear upon both the legislative and executive departments of the General Government. When the fact became generally known that the lease of the franchises of the Russo-American Fur Company by the Hudson Bay Company would expire in June 1867, and would probably be renewed unless we acquired the territory in the meanwhile, the anxiety for the measure increased. Formal negotiations were entered into between Baron Stoekl, the Russian minister at Washington, and Hon. W. H. Seward, Secretary of State, resulting in the formation of the treaty of April 30, 1867, the signatures of the plenipotentiaries being affixed at 4 o'clock on the morning of that day. The consideration of the transfer of the territory named in the treaty was \$7,200,000.

FOREIGN TITLES—LIBERAL POLICY PURSUED BY THE UNITED STATES IN RECOGNIZING AND CONFIRMING TITLES NOT MERELY COMPLETE GRANTS, BUT INCHOATE CLAIMS DERIVED FROM FOREIGN GOVERNMENTS TO LAND WITHIN THE LIMITS OF CESSIONS OF TERRITORY.

In all the above-detailed accessions of territory, whether from States in the Union or from foreign powers, considerable tracts were found already appropriated by private owners under the systems of law previously in force. Besides these there were inchoate titles from former sovereign authority, awaiting confirmation by our Government, and location upon the soil. The action of the United States in all such cases was based upon the highest conception of justice. In some cases these titles were expressly secured by treaty stipulation. But the Supreme Court of the United States, in the celebrated case of *United States vs. Percherman*, (7 Peters, 86,) held that "the modern usage of nations, which has become a law, would be violated; that sense of justice and

right which is acknowledged and felt by the whole civilized world would be outraged, if private property should be generally confiscated, and private rights annulled. The people change their allegiance; their relation to their ancient sovereign is dissolved, but their relation to each other and their rights of property remain undisturbed. If such be the modern rule, even in cases of conquest, who can doubt its application to the case of an amicable cession of territory? Had Florida changed its sovereign by an act containing no stipulations respecting the property of individuals, the rights of property in all those who became citizens of the new government would remain unaffected by the change."

The court further argues that the former sovereign power, having granted its interests in the soil to private owners, had no interest to convey by treaty to this government. Hence the cession of sovereignty could not convey with it the title to those portions of the soil which were covered by prior grants. These principles of public law, so luminously set forth in the above decision, have also controlled the action of the legislative and executive departments of the Government.

Vested rights acquired under former jurisdictions have ever been held sacred.

INDIAN USUFRUCTUARY INTERESTS.

The case of the aboriginal occupants of the public domain rests upon different principles and demands far different treatment. The legal status of the Indian tribes, and of the individual members of those tribes, has been defined with sufficient clearness in several decisions of the Supreme Court of the United States. In the cases of the Cherokee Nation *vs.* Georgia, (5 Peters, 1,) and Worcester *vs.* Georgia, (6 Peters, 515,) the Indian tribes residing within the United States are recognized in some sense as political bodies, not as foreign nations nor as domestic nations, but still possessing and exercising some of the functions of nationality. They hold a relation of wardship to the General Government and are subject to its control. A State legislature has no jurisdiction over the Indian territory contained within the territorial limits of the State; but in the case of New York *vs.* Dibble, (21 Howard, 366,) it was decided that the State holds the sovereign police authority over the persons and property of the Indians, so far as necessary to preserve the peace and protect them from imposition and intrusion.

In regard to right of soil it was settled in the case of the United States *vs.* Rogers, (4 Howard, 567,) that the Indian tribes are not the owners of the territories occupied by them. These are vacant or unoccupied public lands belonging to the United States.

In the case of Johnson *vs.* McIntosh, (8 Wheaton, 543,) it was held that the Indian tribes were incompetent to transfer any rights to the soil, and that any such conveyances were void *ab initio*, the right of property not subsisting in the grantors. The right of making such grants was originally in the Crown, but by the treaty of 1783 it was surrendered to the United States. In the previous pages is shown the process by which several of the States originally composing the American Union divested themselves of this right by transferring both territorial jurisdiction and title to the soil to the General Government. In the case last mentioned Chief Justice Marshall, in delivering the opinion of the court, thus grounded the right of the Government upon prior discovery:

The United States, then, have unequivocally acceded to that great and broad rule by which its civilized inhabitants now hold this country. They hold and assert in themselves the title by which it was acquired. They maintain, as all others have maintained, that discovery gave an exclusive right to extinguish the Indian title or

occupancy, either by purchase or by conquest, and gave also a right to such a degree of sovereignty as the circumstances of the people would allow them to exercise.

The power now possessed by the Government of the United States to grant lands, resided, while we were colonies, in the Crown or its grantees. The validity of the titles given by either has never been questioned in our courts. It has been exercised uniformly over territory in possession of the Indians. The existence of this power must negative the existence of any right which may conflict with or control it. An absolute title to lands cannot exist at the same time in different persons, or in different governments. An absolute must be an exclusive title, or at least a title which excludes all others not compatible with it. All our institutions recognize the absolute title of the Crown, subject only to the Indian right of occupancy, and recognize the absolute title of the Crown to extinguish that right. This is incompatible with an absolute and complete title in the Indians.

We will not enter into the controversy whether agriculturists, merchants, and manufacturers have a right, on abstract principles, to expel hunters from the territory they possess, or to contract their limits. Conquest gives a title which the courts of the conqueror cannot deny, whatever the private and speculative opinions of individuals may be respecting the original justice of the claim which has been successfully asserted. The British Government, which was then our Government, and whose rights have passed to the United States, asserted a title to all the lands occupied by Indians within the chartered limits of the British colonies. It asserted also a limited sovereignty over them, and the exclusive right of extinguishing the title which occupancy gave to them. These claims have been maintained and established as far west as the Mississippi River by the sword. The title to a vast portion of the lands we now hold originates in them. It is not for the courts of this country to question the validity of this title or to sustain one which is incompatible with it.

Although we do not mean to engage in the defense of those principles which Europeans have applied to Indian title, they may, we think, find some excuse, if not justification, in the character and habits of the people whose rights have been wrested from them.

The title by conquest is acquired and maintained by force. The conqueror prescribes its limits. Humanity, however, acting on public opinion, has established, as a general rule, that the conquered shall not be wantonly oppressed, and that their condition shall remain as eligible as is compatible with the objects of the conquest. Most usually they are incorporated with the victorious nation, and become subjects or citizens of the government with which they are connected. The new and old members of society mingle with each other; the distinction between them is gradually lost, and they make one people. Where this incorporation is practicable, humanity demands, and a wise policy requires, that the right of the conquered to property should remain unimpaired; that the new subject should be governed as equitably as the old, and that confidence in their security should gradually banish the painful sense of being separated from their ancient connections and united by force to strangers.

When the conquest is complete, and the conquered inhabitants can be blended with the conquerors, or safely governed as a distinct people, public opinion, which not even the conqueror can disregard, imposes these restraints upon him; and he cannot neglect them without injury to his fame and hazard to his power.

But the tribes of Indians inhabiting this country were fierce savages, whose occupation was war, and whose subsistence was drawn chiefly from the forest. To leave them in possession of their country, was to leave the country a wilderness; to govern them as a distinct people was impossible, because they were as brave and high-spirited as they were fierce, and were ready to repel by arms every attempt on their independence. What was the inevitable consequence of this state of things? The Europeans were under the necessity either of abandoning the country and relinquishing their pompous claims to it, or of enforcing those claims by the sword, and by the adoption of principles adapted to the condition of a people with whom it was impossible to mix, and who could not be governed as a distinct society, or of remaining in their neighborhood, and exposing themselves and their families to the perpetual hazard of being massacred.

Frequent and bloody wars, in which the whites were not always the aggressors, unavoidably ensued. European policy, numbers, and skill prevailed. As the white population advanced, that of the Indians necessarily receded. The country in the immediate neighborhood of agriculturists became unfit for them. The game fled into thicker and more unbroken forests, and the Indians followed. The soil, to which the Crown originally claimed title, being no longer occupied by its ancient inhabitants, was parceled out according to the will of the sovereign power, and taken possession of by persons who claimed immediately from the Crown, or mediately through its grantees or deputies.

That law which regulates, and ought to regulate in general, the relations between the conqueror and conquered, was incapable of application to a people under such circumstances. The resort to some new and different rule, better adapted to the actual

state of things, was unavoidable. Every rule which can be suggested will be found to be attended with great difficulty.

However extravagant the pretension of converting the discovery of an inhabited country into conquest may appear, if the principle has been asserted in the first instance and afterward sustained; if a country has been acquired and held under it; if property of the great mass of the community originates in it, it becomes the law of the land and cannot be questioned. So, too, with respect to the concomitant principle that the Indian inhabitants are to be considered merely as occupants, to be protected, indeed, while in peace, in the possession of their lands, but to be deemed incapable of transferring the absolute title to others. However, this restriction may be opposed to natural right and to the usages of civilized nations, yet, if it be indispensable to that system under which the country has been settled, and be adapted to the actual condition of the two people, it may, perhaps, be supported by reason, and certainly cannot be rejected by courts of justice.

It will be seen that the court confined itself to the discussion of questions essential to a statement of the actual law governing the relations of the Indian tribes, and declined entering upon several abstract questions suggested to its consideration. It assumes the concrete fact that the General Government holds the right of eminent domain as well as the title to the soil in the public lands, subject, however, to the right of occupancy by the Indians. The Constitution of the United States gives to Congress the "power to dispose of and to make all needful rules and regulations respecting the territory, or other property, belonging to the United States." The "territory" or soil, here classed with other property, may be disposed of under rules and regulations prescribed by the legislative authority. The question now arises whether Indian occupancy is an indefeasible right, or whether it is merely a privilege which the Government may withdraw when the interests of civilization or the pressure of immigration may demand it.

According to the above rulings in the case of *Johnson vs. McIntosh*, the General Government has the right to terminate the occupancy of the Indians by "conquest or purchase." Does this involve the right of *forcibly* dispossessing them of that occupancy? This issue has never yet been presented.

Very large portions of the public domain have been acquired by peaceable purchase; other portions have been acquired by conquest, but in all these latter cases the first outbreak of actual war has been by the Indians. Their various tribes have been successively subjugated, and, as the price of peace, have been compelled to part with a portion of their hunting-grounds and to move on to reservations. In our acquisition of Indian territory, and in reducing the wilderness to civilization, we may, through considerations of policy rather than of abstract right, continue to avoid the question. The mere pressure of civilized settlements contracts the range of savage life, by removing the forests in the depths of which the wild game has been able to repair the annual ravages of hunting and trapping, thus preserving a fund of subsistence of spontaneous growth. This deprivation of abundant subsistence, together with the introduction of physical diseases and immoral habits, has produced in the aboriginal tribes that reckless temper which has led them into hostility with the whites, accompanied by horrors of massacre which have roused the most vindictive feelings of the border populations. It is impossible for any administrative power of government to control such evils, growing as they do out of a strange and anomalous mingling of savage and civilized life. All the practical influence governing this case seems to be averse to the Indians; they are daily diminishing in numbers, and at no remote period they will be among the extinct races of men.

The question of natural right presented but not argued by Chief Jus-

tice Marshall in the last-cited decision of the United States Supreme Court, viz., "Whether agriculturists, merchants, and manufacturers have a right, on abstract principles, to expel hunters from the territories they possess, or to contract their limits," would have opened up the whole question at issue between civilization and the savage state. Is it in accordance with justice and natural right for a small number of persons to monopolize large areas of the earth's surface, merely in order that they may escape the obligations of industry which a Divine decree has made the price of subsistence? The same area brought under high cultivation will support a population many thousands of times greater than the number of savages that can gather a precarious subsistence from its spontaneous production. In other portions of the earth crowded populations await relief by immigration, which, however, is restrained by the tomahawk and scalping knife—by the nameless horrors of savage warfare.

But this is not all; the life of the hunter, merely appropriating the spontaneous products of the earth, is utterly incompatible with the development of the higher elements of man. The savage state, instead of realizing an approach to that poetic ideal, the golden age, is shown by our increasing acquaintance with it to be but a scene of squalid misery and vindictive brutalization. Its evils are enhanced by the proximity of civilization. If, then, the arguments of sentimental philosophers in favor of savage life are of any force, they prove too much. From their premises it may be argued that it is the duty of civilized people to lay aside and repudiate civilization as a destructive and unnatural condition of our race, one of those dangerous refinements which should be resisted and reversed. The American people deeply deplore and reprobate the destruction of the Indian tribes, in spite of the utmost efforts of the General Government; but still the popular insight detects an underlying infraction of the great law of humanity, of common justice, in the Indian monopoly of the continent. As action and reaction are equal and reciprocal no less in the moral than in the physical world, it is not at all surprising that this great fundamental wrong in the social arrangements of our race has been productive of unhappy consequences, or that these have fallen with especial weight upon the heads of their unconscious agents and instruments. The failure of our civilization to carry out the law of kindness upon which it is constituted will of course bring its own penalty. But whatever be the moral or legal elements of the question, it is certain that the reign of barbarism on our continent is nearly ended. Civilization, unbroken by episodes of savage life, will soon extend over the whole continent. The end of the present century will probably witness the development of a world-wide social system, a reciprocity of trade, and a systematic development of industry in all the nations of the earth. This glorious consummation will be largely due to the acquisition and disposal of our public domain by the General Government. No one influence has so broadened the area of free society. It has given scope for the colonization of the populations of Europe upon the American Continent, bringing with them the institutions, the arts, the habits, and the ideas of European civilization. It has reorganized society upon the basis of democratic equality, and has obliterated that legal stratification of privileged and unprivileged orders which still subsists in Europe. It has given a broad extension of the Anglo-Saxon political and social organism which was established by the successful issue of our revolutionary war. American society possesses a power of assimilation by which the most diverse elements of immigration have been fused into a common nationality. This power is largely due to the

common element of manhood which is recognized and cherished by our institutions. The basis of our free society is our landed system. The failure of the first aristocratic efforts at colonization upon the basis of feudalistic social organization now appears as an event giving decisive advantages to the development of freedom. Under the charter of King James I, the lands of the first and second colonies of Virginia were to be held by the mildest form of tenure, of free and common socage, which in many of the States of the Union has been transferred into allodial proprietorship.

AMERICAN LAND TITLES—ALLODIAL TENURES.

In the celebrated ordinance of 1787 of the old Continental Congress "for the government of the territory of the United States northwest of the Ohio River," which is the first general legislation of Congress on the subject of landed property, the leading incidents of feudalism were specially repealed. The second section is an epitome of progressive and revolutionary legislation, embracing many of the points on which the issues between social progress and reactionary conservatism have turned. It ordained and enacted "that the estates both of resident and non-resident proprietors in the said territory, dying intestate, shall descend to and be distributed among their children and the descendants of a deceased child in equal parts, the descendants of a deceased child or grandchild to take the share of their deceased parent in equal part among them; and where there shall be no children or descendants, then in equal part to the next of kin in equal degree; and among collaterals, the children of a deceased brother or sister of the intestate shall have, in equal parts among them, their deceased parent's share; and there shall in no case be a distinction between kindred of the whole and half blood; saving, in all cases, to the widow of the intestate her third part of the real estate for life and one-third part of the personal estate; and this law, relative to descents and dower, shall remain in full force until altered by the legislature of the district. And until the governor and judges shall adopt laws as hereinafter mentioned, estates in said territory may be devised or bequeathed by wills in writing, signed and sealed by him or her in whom the estate may be (being of full age) and attested by three witnesses; and real estate may be conveyed by lease and release, or bargain and sale, signed, sealed, and delivered by the person being of full age in whom the estate may be, and attested by two witnesses, provided such wills be duly proved and such conveyances be acknowledged, or the execution thereof duly proved, and be recorded within one year after proper magistrate's courts, and registers shall be appointed for that purpose; and personal property may be transferred by delivery, saving, however, to the French and Canadian inhabitants, and other settlers of the Kaskaskias, St. Vincent's, and the neighboring villages, who have heretofore professed themselves citizens of Virginia, their laws and customs now in force among them relative to the descent and conveyance of property." This noble statute struck the key-note of our liberal system of land law, not only in the States formed out of the public domain, but also in the older States of the Union. The doctrine of tenure is entirely exploded; it has no existence, even in theory. Though the word may be used for the sake of convenience, it is with an accommodated signification from which the last vestige of feudal import had been eliminated. The individual title derived from the Government involves the entire transfer of the ownership of the soil.

It is purely allodial, with all the incidents pertaining to that title as substantial as in the infancy of Teutonic civilization. Following in the wake of this fundamental reform in our State land laws are several others which constitute appropriate corollaries. The statute of uses was never adopted in the public-land States, and hence the complex distinction between uses and trust has never embarrassed our jurisprudence. We have, however, adopted one of the methods of conveyance to which that statute gave rise, to wit: the method of bargain and sale. Feoffinents, fines, and recoveries are entirely dispensed with, as also livery of seisin and its consequences. A conveyance is completed by the execution and delivery of the deed; entailments and perpetuities are barred by the statute, which renders void all limitations beyond persons in being and their immediate issue, and which provides that an estate tail shall become a fee-simple in the heirs of the first grantee. All joint interests in land are reduced to tenancies in common. Joint tenancies never had an existence, and coparceners are now on a footing of tenants in common. Real actions, with their multitudinous technicalities, never had an existence in our western jurisprudence, though some of the fictions of this form of action are tolerated, *e. g.*, the allowance of fictitious parties to a suit. Ejectment is now the universal remedy, being the only action for the recovery of lands. Action by ejectment is limited to twenty-one years, but refractory tenants may be more speedily dispossessed by the action for forcible entry and detainer. A dispossessed claimant may, at the option of the ejector, either pay for the land, or receive pay for the improvements. For waste the party is liable in simple damages, and no more. A tenant in dower forfeits the place wasted. In the older States we see evidences of the reflex benefits of the land legislation of our public-land States. The Pennsylvania supreme court (5 Rawle, 112) holds that "our property is allodial, and escheat takes place, not upon principles of tenure, but by force of our statutes to avoid the uncertainty and confusion inseparable from the recognition of a title founded in priority of occupancy." Chancellor Kent says that tenure to some extent pervades real property in the United States. The title is essentially allodial yet designated by the feudal terms fee-simple and free, and common socage. These technicalities mar the municipal jurisprudence of several States, though no vestige of feudal tenure remains, and ownership, free and independent, is the real character of individual title to the soil. By the statute of February 20, 1787, New York abolished all military tenures, transferring them into free and common socage and making all State grants entirely allodial.

The revised statutes going into effect in 1830 abolished the last shadow of feudal tenure and made allodial proprietorship the sole title to private land, and this property liable to forfeiture only by escheat.

In other States these tenures have either been formally changed into allodial; or if they retain the technicalities of feudalism, the latter receive an allodial signification. An estate in fee-simple means one of inheritance, having lost its beneficiary or usufructuary character.

It will be seen from the facts recited that the liberal principles embodied in our public-land policy have reconstructed to a great extent the legal basis of our social order by liberalizing the ideas of land ownership.

The General Government set this glorious example, and the justice and expediency of its policy in this respect are now universally admitted.

UNITED STATES SURVEYING SYSTEM AS APPLIED TO THE PUBLIC LANDS.

The system was inaugurated in the United States as early as 1785 for surveying and disposing of the public lands; and, having been amended from time to time by acts of Congress, has reached its present complete organization. The framework of the system consists of the following surveyed lines: The principal surveying meridians running due north and south, which are intersected by the principal base lines, are the true parallels of latitude, their intersections constituting the initial points of surveys. Next to these lines standard or correction parallels are established north and south of the bases, at distances of 24 and 30 miles, respectively; and, lastly, guide meridians, at distances of 42 to 48 miles from the principal meridians, divide the country of surveys into parallelograms of suitable extent, any one of which, however distant from the principal bases and meridians, or the initial point of survey, can be divided into townships, the latter being the largest division into which lands are surveyed, each being six miles square, and containing 23,040 acres. Townships are subdivided into 36 sections, of a mile square each, as near as possible, and containing 640 acres. The sections are subdivided into quarters, containing 160 acres; and, finally, the quarters are still further subdivided into quarter-quarters, embracing 40 acres. The sectional divisions into quarter sections and quarter-quarter sections are not actually run and marked in the field; the division of the section of 640 acres into quarter sections is designated by appropriate marks on the half-mile posts established in the field on section lines; while the quarter-quarter sections, or 40-acre tracts, are not so designated in the field, but are indicated by the surveyor general on township plats of the survey by there marking in red ink the surveyed section lines, in order to obtain the quantity of legal subdivisions exhibited on the plats of survey, which are protracted on the scale of two inches to the mile. The public lands are sold by the foregoing subdivisions, and the boundaries of the smallest subdivisions, to wit, into quarter and into quarter-quarter sections, or 160 and 40 acre tracts, not actually surveyed in the field, can be run and marked on the face of the earth for the purchasers or owners thereof by any surveyor, in accordance with the principles laid down by the act of Congress approved February 11, 1805. The rectangular system depends upon the survey of the public lands in accordance with the true meridian, noting, however, the variation of the magnetic needle. In the extensive sphere over which the surveys have progressed from Florida, on the Atlantic, and westward to the Pacific, including all the public-land States and Territories of the Union, with the exception of Alaska, formerly Russian America, the system has worked satisfactorily, furnishing facilities for the acquisition of public lands in any region of the country, and unerring methods for the restoration of landmarks which may be lost or destroyed by time or accident. Adequate means exist in the surrounding landmarks of the adjacent public surveys, whereby missing metes and bounds can be restored in accordance with the original field-notes thereof, and the designations placed on township plats.

Since the introduction of the rectangular system of public surveys in the United States, there have been instituted twenty-five different initial points, or the points of intersection of the principal bases with principal surveying meridians governing the public surveys. The instruments employed in the field-work by United States surveyors consist of solar compasses, transits, and common compasses of approved

construction; four-pole chains and two-pole chains, of 100 and 50 links, respectively, each link of the chain being equal to 7.92 inches. The surveyors' chains are compared with standard chains and standard yard measures furnished surveyors general by the Government. The measurement of the lines of public surveys is horizontal, requiring shortening of the chain over abrupt and undulating surface; the navigable lakes, ponds, and water-courses are segregated from the land, the same being declared by law public highways, and not subject to sale.

The public surveys have been completed in all the public-land States east of the valley of the Mississippi River, with the exception of a very considerable area in the southern peninsula of Florida, Louisiana, and a portion of Minnesota. The sphere of the unsurveyed region in the latter State is estimated at one-half of its area, consisting of the northern and, partly, western portions of the State, as will more fully appear in the tabular statement No. 1, accompanying this report, showing the number of acres surveyed and unsurveyed in each of the land States and Territories up to June 30, 1870.

The unsurveyed portions of the valley of the Missouri and its tributaries are the following:

In Dakota nine-tenths of the area thereof have not been surveyed, the surveys having progressed only in the extreme northeast and southeast corners of the Territory to the extent of one-tenth thereof.

In Nebraska five-eighths remain to be surveyed, consisting of the north-western and south-western portions.

In Kansas one-half of its area is unsurveyed, situated in the southern and western portions.

In New Mexico twenty-five twenty-sixths remain to be surveyed, only one twenty-sixth portion, lying on the Canadian, Pecos, Hondo, and Bonito Rivers, and along the Rio Grande Del Norte, having been surveyed.

In Arizona subdivisional surveys amount to 732,145 acres, situated on Rio Gila, near its confluence with the Rio Salado and Santa Cruz. Arizona formed part of the California surveying jurisdiction until July 11, 1870, when Congress made it a separate district and authorized the appointment of surveyor general. The surveys in Arizona, under the superintendence of the surveyor general of California, during the last year, have been made to the extent of only 46,117.32 acres, owing to the distant sphere of the field operations from San Francisco, and the hostility of Indians in the Territory.

In Colorado one-twelfth of the Territory has been surveyed, principally along the eastern slope of the Rocky Mountains, stretching from the northern to the southern boundary of the Territory, and a few townships in the Middle, South, and San Luis Parks. No surveyed lines have as yet been extended over the eastern and western portions of Colorado.

In Utah one-fifteenth of the Territory was sub-divided in the region extending north and south of the Great Salt Lake to the northern and southern boundaries, with small interruptions, leaving fourteen-fifteenths unsurveyed, lying east and west of Wahsatch Mountains. The surveys during the last year progressed in the direction east of Salt Lake City, and in the southwestern angle of the Territory, in the valley of the Santa Clara; Virgin, Cedar, and Parawan Valleys west of Wahsatch Mountains. There were surveyed in Utah during the last year 659,946 acres.

In Idaho and Montana but limited progress has been made in public surveys. In Idaho there had been less than a million of acres surveyed of the fifty-five millions comprised in that Territory; in Montana about

the same area out of the ninety-two millions of acres within its limits. The Idaho surveyed lands are situated on the Salmon, Payette, and Snake Rivers, and in Montana, on the Missouri River and its three forks, Gallatin, Jefferson, and Madison, forming the headwaters of the Missouri River; also in the vicinity of Helena, and the valley of Hell Gate River.

In Nevada the lines have been extended over only one-twenty-fourth of its area, chiefly in the northern and western portions of the State, in the valleys of Walker, Humboldt, and Truckee Rivers; also along the Central Pacific Railroad route, and near the Pahrangat Lake, in the southeastern part of Nevada, leaving twenty-three twenty-fourths as yet unsurveyed, equal to about sixty-eight millions of acres.

In California one-third has been surveyed, principally in the valley of San Joaquin and Sacramento Rivers, and their tributaries, and in the south eastern region of the State surrounding San Bernardino Mountains. The unsurveyed portions of the State consist of the ranges of Sierra Nevada Coast, Mount Diablo, and San Bernardino Mountains, and the numerous valleys all over the State, bounded by abrupt mountains to which no lines of public surveys have been extended. The western slope of the Coast Range of mountains stretches from the Bay of Monterey to the southwestern angle of California. The survey of this region of the country adjacent to the Pacific Ocean has been deferred in consequence of the existence of numerous unadjudicated private claims growing out of the treaty of Guadalupe Hidalgo, of 1848. For the precise quantity of the surveyed and unsurveyed lands in California, reference is made to a tabular statement accompanying this report.

In Oregon the surveys have been extended over one-seventh of the area, chiefly in the Willamette, Columbia, John Day, Des Chutes, Umatilla, Umpqua, Coquille, and Rogue River valleys. The unsurveyed portions of the State consists of the Coast Range, Cascade, and Blue Mountains, together with the central, eastern, and southeastern portions of Oregon.

In Washington Territory one-eighth of the surface has been subdivided, including 300,000 acres which were surveyed during the fiscal year ending June 30, 1870, leaving about thirty-nine million acres of unsurveyed public land in the Territory. The principal portions over which the lines of public survey have been extended are situated due north and south of the Puget Sound, along the Columbia River, from its mouth up its right bank to its confluence with the Snake River, in the valleys of Walla-Walla and Yakama, tributaries of Columbia River, and in the valley of Chibalis River, emptying into Gray's Harbor of the Pacific Ocean. The surveys embrace about five million acres, leaving an unsurveyed area of the Territory nearly equal to thirty-nine million acres, covered by the extensive range of the Cascade and the Olympic Mountains, together with the Great Plateau of Spokane, situated north of the Snake, and east of the Columbia River, as well as the extensive valley of the Okinakane River, the northeastern tributary of the Columbia River.

In Wyoming Territory, the latest organized surveying district, comprising 62,645,120 acres, no surveying operations were carried on during the last fiscal year, ending June 30, 1870, for the reason that the Wyoming land district was not organized until late in the fiscal year, viz., the 5th day of February last. Since the opening, however, of the surveyor general's office at Cheyenne, contracts have been closed with different surveyors for the extension of the public lines, resting upon the principal base line, on the fortieth parallel of north latitude and the sixth principal meridian. The sphere of field operations is to begin in the

vicinity of Cheyenne City, on the Union Pacific Railroad, and to progress along the road westward.

Alaska has not been organized into a surveying district, and consequently the surveying machinery has not yet been there extended.

BOUNDARY LINES ASTRONOMICALLY ESTABLISHED—THE SURVEY OF THE NORTHERN BOUNDARY OF CALIFORNIA.

Pursuant to the act of Congress of March 2, 1867, for the establishment, survey, and marking of that portion of the forty-second parallel of north latitude included between the one hundred and twentieth meridian of west longitude and the Pacific coast, and forming the boundary line between California and Oregon, field duties were commenced early in the season of 1868, and concluded in August 1869.

During the past year the final report, containing a full record of the astronomical, magnetic, barometric, and geodetic observations, deduced results, together with detailed field-notes and maps, has been received from Daniel G. Major, United States astronomer and surveyor, in charge of the work, under his contract, dated 1st October, 1867, with this office.

In the establishment of this boundary five astronomical stations were determined, and a series of over four thousand observations made for the correct demarcation on the earth's surface of this portion of the forty-second parallel.

The first and most important station was located near the head of Surprise Valley, at Camp Bidwell, where a temporary observatory was erected, and a protracted series of observations taken, extending through the greater part of three lunations: the longitude being found by the method of moon culminations, corroborated by several occultations. The latitude was deduced from a discussion of a large number of differential measurements of meridional zenith distances of stars on opposite sides of the zenith, and likewise includes the results obtained from many observations of meridian altitudes measured with Gambey's sextant. The reduction of these observations being for the purpose of ascertaining the intersection of the forty-second parallel with the one hundred and twentieth meridian, a geographical position of much significance, it being the initial point of the California-Nevada line on the Oregon boundary.

Deduced longitude of Camp Bidwell.....	120° 05' 47".5
Deduced latitude	41° 51' 34".4
Magnetic declination	19° 10' east.
Altitude above mean sea level	4,685 feet.

The initial point is therefore $5' 47''.5 = 4$ miles and 78 chains east, and $8' 25''.6 = 9$ miles and 56 chains north.

Surprise Valley, situated between ranges of the Sierra Nevada Mountains, seventy miles long, and from three to ten miles wide, is a fertile, well-settled district, partly in California and partly in Nevada. The greater part of this basin is reported by the astronomer and surveyor to be covered by a lake of recent formation; old pioneer voyageurs and emigrants asserting that in 1848-49 an area some forty miles long, which is now submerged, was in those days a dry valley, with but here and there a marsh; numerous hot springs issue from the mountain sides, and the whole country is of volcanic origin. During the season of 1868, while Mr. Major was observing, he reports several earthquakes; that of August 27, at 8.45 a. m., being so violent as to stop the box chronometer and disturb the instrumental adjustments.

Measuring a few miles from Camp Bidwell, north and east, the astronomer and his party passed out of Surprise Valley over a series of irregular mountain ridges, the most prominent being Mount Bidwell, to the initial point, which is situated, on a hillside, overlooking the new military road from the valley to Fort Warner, and near a stream known as Twelve Mile Creek. The initial point is perpetuated by a large stone monument surmounted by a cap-stone, appropriately inscribed.

Proceeding west, in tracing the parallel, the astronomer and party crossed a succession of mountain ridges with marked ascent, cut by deep ravines, until, passing the 8th mile monument, the culminating ridge, and most elevated on the line, was attained; that ridge affording a view of wild and sublime scenery of unsurpassed grandeur, besides being of great practical value to the topographical engineer in locating correctly a vast extent of country, diversified by high mountains and a chain of beautiful lakes, including the broad and magnificent expanse of Goose Lake, thousands of feet below; and Wright Lake, miles beyond the timber ridges, may here be accurately outlined. Turning to the eastern horizon, that notable landmark, Beatty's Butte, and the more prominent Steen's Mountain, are visible a hundred and more miles distant, while to the west-southwest, resting in stately grandeur on its vast pedestal, is seen the majestic form of Shasta Butte, with its heavily laden bi-capped summits extending far into the region of eternal snows, the most sublime topographical feature of far-famed California.

Descending abruptly over sparsely timbered ridges, cut by deep lateral cañons containing small streams, on the 13th mile the line enters the fertile valley of Goose Lake, an excellent agricultural district, rapidly filling up with an enterprising and thrifty population. The surrounding mountain slopes offer an extensive grazing country, having an abundance of water, grass, and timber.

Goose Lake, thirty-five miles long, and from three to eleven wide, almost equally divided by the forty-second parallel, is the largest body of water in the lake district, abounding in fish and water fowl. Upon leaving the western shore on the 23d mile, the line enters a densely timbered tract of low mountains or succession of trap ranges, broken by deep ravines and covered with extensive masses of pumice stone and broken trap rock; at the 49th mile was fixed the second astronomical station, on a small tributary of Wright Lake, a few miles south; thence, over like character of country, the line passed through pine, juniper, and mountain mahogany timber, and a rocky waste of no agricultural value; at the 65th mile the line leaves timber ridges and descends to Rhett Valley, an extensive flat forming a portion of the area of the great basin, which includes the Upper and Lower Klamath, Rhett, and Wright Lakes, with the surrounding valleys; at the 67th mile from the initial point the boundary enters Rhett Lake, coursing its northern margin and throwing into Oregon a portion of its waters, together with the most of Lost River, a natural canal affording an outlet for the high waters of Wright and Upper Klamath.

Passing from the west edge of the lake at the 77th mile, near the third astronomical station, on the Old Emigrant road to Yreka and Southern Oregon, and crossing sage-brush flats, the parallel was traced to the east border of Lower Klamath Lake, on the 81st mile. Here, as in the other lakes, transverse trap ranges extend far into the water, and several isolated peaks rise hundreds of feet from its surface.

The whole region seems in past ages to have been a great inland sea. The adjacent plains are adapted to cultivation, and support large herds of cattle, tended, at trifling expense, by the Modock Indians,

an industrious and peaceful tribe. From the western margin of the Lower Klamath, in the 93d mile from point of beginning, the boundary passes out of that great plateau between the Sierra Nevada and the Cascades, which, if not very valuable for fertility, is nevertheless reported by the surveyor to be an interesting geographical district, rich in its chain of numerous extensive and beautiful lakes, forming a large reservoir from which the Sacramento, Willamette, Des Chutes, Rogue, Klamath, and lesser rivers draw in part their supplies. Much of this extended area will in time be reclaimed by a judicious system of irrigation. Nature has done much to the furtherance of this end; but little remains for man to do, and that may be accomplished with inconsiderable expense.

Again the boundary line traverses elevated timbered mountains, and at the 109th mile crosses the Klamath River, where it breaks through in an immense chasm of great depth, with precipitous, rocky sides, from 1,000 to 1,200 feet altitude. Ascending more sparsely timbered spur ridges of the Siskiyou Range, cut off by ravines whose perpendicular sides rise to several hundred feet, at the 130th mile pass two miles to the south of that remarkable landmark, Pilot Knob, towering far above the surrounding mountains; thence commences a gradual descent to "Cole's Ranch," near which, and on the California and Oregon stage road, was determined, by a long series of observations, the fourth astronomical point of the line. From this point Mr. Major, the astronomer and surveyor, states that the boundary parallel follows up lateral spurs of the main ridge close to the mining trail, and, passing valuable deposits of marble, slate, and auriferous quartz, begins to traverse the gold-producing belt of forty-second parallel, extending across even to the ocean. Leaving the formerly rich mining camp of Hungry Creek just south of the line, while dividing those of Grouse and Beaver Creeks, it follows up the steep ascent of Sterling's Mountain, crossing the main Siskiyou "divide" in a low saddle on the 147th mile, and strikes transversely the numerous high ridges and deep cañons, bearing down to Elliott Creek to the south crossing the principal Applegate at the 160th mile. This creek is a large torrent flowing through a cultivated valley, containing good farms with substantial improvements, and was, years since, a rich placer mining camp, where the hard-working miner was amply rewarded for his industry; but most of the "diggings" have been worked out, and quartz mining is partially supplying the defection of the wandering prospectors.

Thence west, the line penetrates the timber-clad, rugged mountains of the Siskiyou Range, and follows near the ill-defined "divide" between the waters of the Klamath and Rogue Rivers, passing ridges exceedingly irregular, broken, and cut by ravines of great depth, choked with dense underbrush, and boulders, interlaced with many fallen trees, rendering the passage very difficult.

Near the summit of a high, backbone ridge, at the 167th mile, the astronomer made a set of observations for latitude and azimuth, and established the fifth astronomical station. Continuing west, over much the same general elevation, through a labyrinth of mountains, the precipitous sides of which were covered with densely matted brush, necessitating the cutting of trails, it was found that the character of the country did not vary much, unless to become more impassable, with great scarcity of grass for the animals. The parallel leaves the well-known "Alt House" mining district, some four miles to the north, and at 184½ miles crosses the Illinois River, near the junction of its branches, about three miles south of the town of Waldo, or "Sailor Diggins."

From the 133d mile to the 190th mile, traversing the irregular ridges and crests of the Siskiyou Range, the whole region is reported to be a granite and quartz formation, and has been irregularly prospected by individual miners, but without system. Such is the extreme difficulty of traveling these unknown localities that miners generally follow the creek-beds, and seldom the mountain sides. There was not a stream that the men of the surveying party prospected which did not give the "color" and, in many places, good "pay."

The country about Alt House, Sailor Diggins, and adjacent neighborhood, formerly was the richest portion of the Pacific States, and although the placers now pay very much less on being rewashed, there is every probability, upon the introduction by capitalists of improved machinery, that quartz mining will become a lucrative business.

Running further west on the boundary, the country assumes a changed appearance on entering the Coast Range, being less elevated and less timbered, but more diversified by deep cañons, which offer serious obstacles to progress. Ten miles north of the parallel is the rich and productive farming valley of the Illinois River, well settled and cultivated. The line ascends to the summit of Red Mountain, passing across, on the 199th mile, the wagon road from Jacksonville to Crescent City, the principal trade outlet for Rogue River Valley and vicinity, and then enters a district of rich deposits of copper, chromium, and iron, passing several mines, in the development of which much capital has been expended. Approaching the Pacific Ocean, the surveyor says language fails to describe the almost insurmountable difficulties experienced in measuring the line through impenetrable undergrowth of tropical density, entangled masses of burned and fallen timber, perpendicular mountain sides, and profound ravines; the winds from the ocean, laden with moisture, deposit dense fogs on the mountain tops and ravines, adding much to the difficulties of exploration.

The boundary line terminates at the coast line of the Pacific, 212½ miles from the initial point, and about one-third of a mile south of the Winchuck River. The field-notes of the survey of the boundary show that throughout the whole distance it is most durably marked by substantial stone monuments, with inscriptions giving the latitude, longitude, and distance, erected at the exact termination of each mile, where possible. It is also extensively blazed through the timber, and perpetuated by over a thousand bearings of prominent landmarks, designed permanently to indicate the common boundary between the States of California and Oregon.

BOUNDARY BETWEEN COLORADO AND KANSAS.

This boundary is coincident with the twenty-fifth meridian of longitude west of Washington, and extends from the intersection point of the thirty-seventh parallel of north latitude to the fortieth—estimated distance, 210 miles.

No survey of this boundary has yet been made, although its establishment is of importance. The appropriation of \$2,520 made by Congress, at \$12 per mile, having proved entirely insufficient for the purpose, special estimate, at the rate of \$25 per mile, was submitted for \$2,730, in addition to the former sum, which, if authorized, would have made an amount of \$5,250; but in giving authority for the increase of mileage from \$12 to \$25, Congress omitted to appropriate the said sum, \$2,730, consequently we have been unable to secure the services of competent and scientific contractors to perform that work. Since steps were taken

by this office looking to an early survey of the boundary, it has transpired that the initial point of the survey of the boundary, or the intersection of the thirty-seventh parallel of north latitude with the twenty-fifth degree of longitude, had not been determined by the War Department in the survey of the southern boundary of Kansas, and that this circumstance will require additional scientific service in determining astronomically the point in question, and hence an allowance of \$35 per mile is needed, with an appropriation of \$7,350, as the former appropriation of \$2,520 for this service became inapplicable in consequence of statutory interdict of July 12, 1870, (U. S. Laws, 1869 and '70, p. 251, sec. 7.)

EASTERN BOUNDARY OF NEVADA.

Soon after the passage of the act of Congress authorizing the survey of the common boundary between the State of Nevada and the Territories of Utah and Arizona an act was passed, on the 20th July, 1868, appropriating the sum of \$10,625 for the survey of the eastern boundary of the State of Nevada, estimated at 425 lineal miles, at the rate not exceeding \$25 per mile; instructions were given to the surveyor general of that State to have the boundary astronomically surveyed. As the establishment of the boundary involved determination of both latitude and longitude, requiring superior mathematical instruments and high professional skill in the survey, that officer was not able to procure suitable persons for the compensation provided by law, and consequently nothing was done in the matter during the fiscal year ending June 30, 1869.

Representations having been made to Congress respecting the inadequacy of the mileage allowed for the astronomical work, increased rate per mile was made during the last session, authorizing the pay of \$40 per mile, in lieu of \$25, heretofore allowed; corresponding appropriation was made for the work; whereupon additional instructions were given to the surveyor general of Nevada, directing him to contract for the service by establishing the initial point at the intersection of the thirty-seventh meridian west from Washington with the tract of the Union Pacific Railroad, instead of with the middle of the River Colorado of the West, as was in the first instance determined upon. The change in this respect was introduced on account of more convenient and acceptable locality for astronomical determination of the longitude in connection with telegraphic facilities, securing greater accuracy in the results of astronomical data than could be had in the former locality, a region situated far from these advantages.

The contract for the survey of the boundary was closed by the surveyor general in August last, and being approved by the Commissioner of the General Land Office, the work is now in progress, with the prospect of early completion. The result will put to rest numerous conflicts respecting political and civil jurisdictions of the coterminous State and Territories.

BOUNDARIES OF THE STATE OF NEBRASKA COMMON TO THOSE OF THE TERRITORIES OF COLORADO AND WYOMING.

By the act of Congress approved July 20, 1868, there was appropriated for surveying the boundary line between the State of Nebraska and the Territory of Colorado and that portion of Dakota (now part of Wyoming) Territory embraced within the forty-first and forty-third degrees of north latitude the sum of \$4,800; which sum, being afterward found insufficient

for the service, was augmented by the sum of \$3,200, appropriated by the act of Congress approved March 3, 1869. The United States surveyor general of Nebraska and Iowa was accordingly instructed to enter into contract with a practical astronomer and surveyor to determine the aforesaid boundary lines astronomically, and to survey and mark them in the field in accordance with the boundaries described in the act admitting Nebraska into the Union, approved April 19, 1864. The southern boundary of Nebraska, on the fortieth parallel of north latitude, was established in 1854 by a member of the Corps of Topographical Engineers as the base line governing the surveys of public lands in Kansas and Nebraska, thus obviating the necessity of determining this parallel further than the point of intersection of the base line with the twenty-fifth degree of longitude west from Washington. The following points of intersection of latitude and longitude, together with the twenty-fifth degree of longitude west from Washington, were required to be astronomically determined:

First. The forty-first degree north latitude with the twenty-fifth degree longitude west from Washington;

Second. The forty-first degree north latitude with the twenty-seventh degree longitude west from Washington; and

Third. The forty-third degree north latitude with the twenty-seventh degree longitude west from Washington.

During the winter of 1868-'69 the United States Coast Survey made telegraphic connection across the continent for the purpose of determining the difference of longitude between Cambridge, Massachusetts, and various other points west of that place. Omaha, Nebraska, was one of these points, and the observatory being in operation at the period when the boundary survey was commenced by Mr. O. N. Chaffee, the astronomer and surveyor contracting with the surveyor general of Iowa and Nebraska for the service, advantage was taken of the facilities afforded in determining the position of Julesburg, Colorado, and Bushnell Station, Nebraska, on the line of the Union Pacific Railroad. Accordingly the surveying party first proceeded to Bushnell Station, where sets of time signals were exchanged by telegraph with the officer in charge of the Omaha observatory, the mean of forty-two sets of seven each, recorded at Omaha by the Coast Survey clock and chronograph working in the electrical circuit, giving the difference of time between the two stations as 31 minutes and 45.75 seconds, from which the position of Bushnell was found to be in longitude $26^{\circ} 50' 6''.45$ west from Washington. Numerous circum-polar and circum-meridian observations of stars determined the latitude of Bushnell to be in $41^{\circ} 13' 54''.4$.

By a similar mode of proceeding the longitude of Julesburg, Colorado, was found to be $25^{\circ} 18' 30''.9$ west from Washington. The mean of 115 circum-meridian observations of stars north and south of the zenith places Julesburg in $40^{\circ} 59' 1''.56$ north latitude. All these observations were conducted with care and precision, and the results attained may be regarded as practically correct.

The next important feature of the work was the survey and marking of the twenty-fifth meridian, and curve of the forty-first parallel of north latitude on the earth's surface. The longitude of the Julesburg meridian being first ascertained, the twenty-fifth meridian was found to be distant therefrom 16 miles 10.47 chains due east.

Starting at Julesburg, the surveyer ran due north a distance of 1 mile and 9.65 chains to the forty-first parallel of north latitude, establishing at 10.47 chains east of this intersection the 16th mile-post west of the twenty-fifth meridian. The survey of this forty-first parallel is

commemorated by 104 mile-posts of cottonwood and Norway pine, eight feet in length, and six inches square, planted firmly in the earth to a depth of three feet, above a small marked stone described in the field-notes, the earth being raised three feet high above the post, and pits dug each side on the line. A charred stake, or a small quantity of charcoal, was deposited under each post as a substitute for the stone, in cases where the latter was not available; the fact being duly noted in the field-notes of survey. These corners were witnessed by marking all noticeable permanent natural objects, such as rocks, peaks, and hills, whose relative positions were also described in the field-notes. At the intersection of the forty-first parallel of north latitude with the twenty-fifth meridian west of Washington there was placed a limestone monument, six feet long and one foot square for one foot from the top, and of octagonal shape below, planted two feet deep in the ground, a mound three feet high raised around it, seven feet in diameter at the base, and sloping in toward the top, four pits, two feet square and one foot deep, being dug toward the cardinal points. This monument is inscribed on the north side, "25° W. L.;" on the east side, "Nebraska;" and on the west side, "41° N. L." At the intersection of the forty-first parallel with the twenty-seventh meridian a similar monument was erected and a mound of stone, three feet high, seven feet in diameter at its base, and five feet at its top, raised around it. On the side of this monument facing north, there was inscribed "27° W. L.;" on the side facing east, "104 miles 72 ch. 7 fks.;" on that facing south, "Colorado;" and on that facing west, "41° N. L." From the 16th mile-post the surveyor continued the transit line eastward, making proper offsets at the end of each mile, to the north, before establishing each mile-post. At 46 chains and 93 links east of the tenth mile-post west of the twenty-fifth meridian, the Union Pacific Railroad crosses the boundary, from northeast to southwest. The soil between Julesburg and this point is poor and sandy, with some marshy land. The surface is low and level in most places. Stopping here, the surveying party retraced their steps, and, commencing at the intersection of the Julesburg meridian with the parallel, the transit line was continued westward to the twenty-seventh meridian, where its intersection was marked by a monument herebefore described. At 11 chains and 3 links west of the 17th mile-post the Union Pacific Railroad track again crosses the boundary line, bearing northwest and southeast. At the distance of half a mile to the west of this point the boundary crosses Lodge Pole Creek, here a small stream only 25 links in width. From this point the line passes through a rather uninteresting monotonous stretch of country, with poor soil and little water at the season (July) when the survey was made. The parallel frequently crosses dry creek beds, but the scarcity of running water is a noticeable feature. Banks of red gravel and small knolls literally paved with cobble stones were frequently met with, and near the 33d mile-post a large bank of good limestone was observed. Between the 38th and 47th mile-posts the region contains a large amount of good land, although the usual scarcity of water is manifest. The general appearance of the country is that of a gently rolling prairie, dotted frequently with surface knolls. There are no large stones near the surface, but the ground, in many places, is overspread with limestone gravel. Between the 66th and 85th mile-posts the region assumes a more broken and bolder aspect, being frequently worn into ravines and cañons, where water can be obtained by digging a few feet below the surface. Bluffs rise in some cases to the height of one hundred feet, the soil, being dry and arid, affording only scanty growth of grass. At

one point the line is crossed by a vertical wall of sandstone, eight feet high. At the 85th mile the character of the soil improves greatly, although the country is very dry. The Bushnell Station meridian intersects the line 22 miles and 62 chains west of the 96th mile-post. Thence to the twenty-seventh meridian the soil is second and third rate, with poor grass, the surface being nearly level.

From the point of intersection of the forty-first parallel of north latitude with the twenty-seventh meridian the boundary line was run due north along the meridian, and posts established at the end of each mile. These posts, similar to those used for the forty-first parallel, were inscribed, on the north side, "27° W. L.," on the east side, "Nebraska," on the west side, "Wyoming," and on the south side with the number of the mile. The first seven miles the surface of the country is nearly level and the soil is third-rate or worthless. From the seventh mile-post to Lodge Pole Creek Bottom and the Union Pacific Railroad track, between the 12th and 13th miles, the surface is rough, having an irregularly broken aspect, with bluffs of sandstone capped with limestone. The soil is quite inferior. On the 14th mile the line crosses Lodge Pole Creek, course southeast, three times. For the next few miles the line passes along a rough, rocky section, in many places under overhanging bluffs. As far as the 23d mile-post the soil is rocky and worthless, but at this point its character changes to good, and grass is found in abundance. Norway and pitch pine trees are scattered over the country as the line progresses to the northward, while small hills and ravines destroy the monotony of scenery along the first part of the line. Near the 46th mile-post a singular chimney-shaped rock was seen, in the midst of a rocky country, with sandy soil of fair quality. For the next six miles the country is a succession of rock walls, ledges, pinnacles, and bluffs, with a poor soil and scanty grass. Midway between the 63d and 64th miles the line crosses Horse Creek, an alkaline stream 40 links wide. The bank of the North Platte River was reached at 68 miles 31.50 chains. The river is here 29 chains in width, having an island in its center of 9 chains width. The bottom lands are at this point nearly 2 miles in width. From these, as far north as the 80th mile-post, the soil is inferior, being in many places sand, drifting with every wind. The line crosses Spoon Hill Creek, 4 links wide, often camped on by the Indians, as the soil on its banks is very good, and grass is abundant. The soil, continuing further north, again becomes poor, rocky, and productive of little vegetation except weeds and sunflowers. The surface becomes more and more broken till on the 132d mile the country is rendered impassable for wagons by numerous sharp ravines. Here the soil changes into a yellowish clay, and a few miles further north into the "bad lands," destitute of vegetation. At 138 miles 22.67 chains, the position of the forty-third parallel of north latitude, as deduced by careful observations, a white limestone monument of the usual size and shape was erected, and marked, on the north side, "27° W. L.," on the east, "43° N. L.," on the south, "138 m. 22 ch. 67 lks.," and on the west, "Wyoming."

From this point the surveyor proceeded to the 9th mile-post of the forty-first parallel and completed the survey of that portion of the boundary east to the twenty-fifth meridian, the position of the 8th mile-post west of which was found to be near the middle of the South Platte River, here 65 chains across. The surface is gently rolling; soil, second and third rate.

From the monument at the intersection of the forty-first parallel with the twenty-fifth meridian, described before, the surveyor ran a transit

line south, erecting temporary mile-stakes, and at a point 67 miles south of the forty-first parallel, being approximately on the fortieth parallel, a search was instituted for marks of the base line surveyed on this parallel in 1859. Finding no traces, the transit line was prolonged several miles, and search made for marks of the Kansas boundary, which could not be found. The intersection of the twenty-fifth meridian with the fortieth parallel, as determined by 111 observations, was commemorated by a limestone shaft, of usual dimensions, planted in the usual manner, and marked, on the north side, "1869," on the east, "40° N. L.," on the south, "25° W. L.," and on the west, "Colorado." The soil is here clayey and of inferior quality. From this point the boundary line was surveyed due north on the twenty-fifth meridian, and the end of each mile marked with a post of the usual size, and inscribed, on the north side, "25° W. L.," on the east, "Nebraska," on the south the number of the mile, and on the west, "Colorado." At 68 miles 79.59 chains the line closes on the monument erected before at the point of intersection of the forty-first parallel with the twenty-fifth meridian. The entire length of this boundary line is 312 miles 14 chains and 33 links, surveyed and established at a cost to the United States of \$7,804 48, being \$195 52 less than the amount appropriated by Congress.

SURVEY OF INDIAN RESERVATIONS.

1. The Sisseton and Wahpeton and Cut Head bands of Yanktonais, of Dakota or Sioux Indian reservation, situated west of Big Stone and Travers Lakes, was subdivided into 40-acre tracts, by direction of the Secretary of the Interior, for the purpose of making allotments to the Indians, conformably to the provisions made in the third and fifth articles of the treaty with the said Sissetons and Wahpetons, concluded February 19, 1867, (U. S. Laws, vol. 15, p. 506.) The returns of the survey were made to this office, consisting of the field-notes and triplicate plats thereof, comprising 918,352.70 acres.

2. The Navajo Indian reservation, provided for in the second article of the treaty with those Indians, concluded June 1, 1868, (*vide* U. S. Laws, vol. 15, p. 668,) was surveyed. This reservation is situated partly in the extreme northwest corner of New Mexico, and the northeast corner of Arizona, having for its eastern boundary the longitude of the old Fort Lyon in New Mexico, which constitutes special surveying meridian for the lands embraced in the reservation. Its southern boundary coincides with the latitude of old Fort Defiance, extending west 61 miles 40 chains; its western boundary lying in the Territory of Arizona, running north to the intersection of the southern boundary of Utah, a distance of 84 miles 65.75 chains, and its northern boundary the thirty-seventh parallel of north latitude for the distance of 61 miles 18.07 chains. This reservation was surveyed and subdivided, in accordance with the public land system, to the extent considered necessary for Indian purposes, and consisting of lands suitable for agriculture. The returns of the Navajo reservation have been made to this office, consisting of the field-notes of the survey and triplicate township plats, embracing over 3,000,000 acres; the cost of the survey being \$75,785 81.

3. In regard to the Nez Percé Indian reservation, in Idaho Territory, under the provisions of the first article of the treaty of August 13, 1868, (U. S. Laws, vol. 15, p. 693,) orders have been given for the same to be surveyed and subdivided into 20-acre tracts. The contract was entered into by the surveyor general of the Territory and one of his deputies, for the survey of portions of the extensive reservation

containing arable lands, at a cost not to exceed \$12,862 41, assigned by the Secretary of the Interior for that purpose. The surveyor is in the field executing the work.

4. In respect to the Yankton Indian reservation, in Dakota Territory, situated on the Missouri River, instructions have been given for the same to be surveyed into 80-acre tracts, to be assigned to individual Indians; the subdivisional lines running at right angles to the course of the river and extending back to the adjacent hills. Contract has been closed by the surveyor general with one of his deputies, who is pushing the work to an early completion, the expenses of the survey payable out of \$5,000 set apart by the Secretary of the Interior from the appropriation of \$2,000,000 made by the fourth section of the Indian appropriation act of April 10, 1869, "to promote civilization" among the Indians.

5. The Chickasaw lands in the Indian Territory have been contracted for by this office for their survey into 160-acre tracts, as required by the eleventh article of treaty concluded with the Choctaws and Chickasaws, April 28, 1866, (U. S. Laws, vol. 14, p. 774.) The surveyors appointed by the Secretary of the Interior have left for the sphere of their operations. The expenses of the survey will be chargeable to the appropriation of \$444,480 made by Congress July 15, 1870, "for surveys of exterior boundaries of Indian reservations, and subdividing portions of the same," (U. S. Laws, 1869-'70, page 358.)

INDIAN MATTERS.

Pursuant to an order of the Honorable Secretary of the Interior, dated 12th August, 1869, instructions were issued by this office, in November of that year, to the surveyor general of Dakota Territory, to enter into contract with an experienced surveyor for the subdivision of so much of the Yankton Indian reservation in that Territory as could be executed for the sum of \$5,000, set apart by the Secretary from the appropriation of \$2,000,000 made by the fourth section of the Indian appropriation act, approved April 10, 1869, to promote civilization among the Indians.

The Commissioner of Indian Affairs having advised this office that it was desired that eighty acres be taken as the standard for the size of the smallest subdivisions of said reserve, the surveyor general was directed to cause the contemplated surveys to be executed at an early day, and to connect the same with the public lines north of the Missouri River, so that when the whole area of the reservation shall have been surveyed, the lines within the reservation may connect with those closing on the exterior limits of the reservation and form one series of surveys from the same principal base and meridian.

It having been ascertained subsequently that the rectangular system of surveys was not adapted to the subdivision of the bottom lands along the Missouri, (the only portion of the reserve desired to be subdivided at present) in such a manner as to give each family of the tribe a portion of the river front, it became necessary to modify our former instructions, and the surveyor general was directed to cause the survey of these lands into lots containing, as nearly as the configuration of the river and bluffs would allow, eighty acres each, each lot to front upon the river and to extend back to the bluffs, with a width depending upon the distance between the bluffs and the river.

Under these modified instructions the surveyor proceeded to the field and surveyed and marked a series of lots, extending along the entire front of the reserve, a distance of more than thirty miles. These lots

187 in number, were inadequate to afford a lot for each head of a family, there being more than four hundred heads of families in the tribe. Under these circumstances the surveyor suggested that the most suitable place for the location of the remainder of the lots is a level tableland, extending northwesterly from the agency buildings some eight miles along the old stage road to Fort Randall; but as the Indian agent reported that this region is destitute of wood and water for the greater part of the year, also of grass in sufficient quantities for making hay, and the tract being from four to eight miles north of the Missouri, to which all who might be located there would have to go for fuel and water, it was determined by the Acting Commissioner of Indian Affairs to make a further subdivision of the lots already surveyed. Therefore, upon his recommendation, this office, under date of 29th September, 1870, instructed the surveyor general to make a further subdivision of the lots in such a manner as to give to each person entitled a portion of the bottom lands on the river front, taking care, however, to incur no liabilities in excess of the \$5,000 set apart for the purpose.

TOPOGRAPHICAL AND STATISTICAL NOTES OF THE PUBLIC DOMAIN.

The study of the natural resources of the public domain of the United States presents points of remarkable interest. The patriotic citizen will experience a feeling of profound satisfaction at the extent of that physical basis of our prosperity which is here unfolded. The cosmopolitan philanthropist will find the theme scarcely less attractive, as opening up the noblest field for the expansion of civilization, and for the reorganization of society upon the broadest basis of democratic freedom.

But the question has also practical aspects. The masses of Europe and the settled populations of our own older States are especially interested in the grand openings to individual enterprise now developing in the Great West. In order to meet such wants, the following notices of the resources, development, and prospects of each of the public land States and Territories are presented. The demands for specific information upon all these points are numerous and pressing, and if answered in each case *in extenso* would seriously interfere with the regular business of the office.

In studying the natural features of the public domain, our knowledge is, as yet, too imperfect to enable us to give anything like an accurate topographical division of the country. The most obvious arrangement of the territory of the republic into the Atlantic slope, Mississippi basin, and Pacific slope is sufficiently exact for all the purposes of description.

THE ATLANTIC SLOPE, embracing the original thirteen States with Maine and Vermont, covers an aggregate area of 386,968 square miles.

The public-land States of this division, all of which are on the Gulf of Mexico, are Florida, Alabama, Mississippi, and Louisiana. The larger portion of the last mentioned State lies in the second grand division of the republic, being west of the Mississippi River. These four States embrace an area of 198,492 miles, or 127,034,880 acres, nearly equal to the French Empire.

Their natural resources will be found in detail in the following papers. Their climate, soil, and productions, however, bear a general similarity, being of a semi-tropical type, but verging upon the more decided peculiarities of the temperate zone in the northern parts of Mississippi and Alabama. Their important staples are cotton, sugar, and rice, beside a great variety of delicious semi-tropical fruits. As a place of residence

they present many attractions, while, as a theater of industrial or commercial enterprise, they will not yield the palm to any other portion of our country. They have partially recovered from the desolations of war, and are entering upon a career of great prosperity.

As a field of immigration they offer many advantages, especially to the southern population of Europe.

FLORIDA.

This, the southernmost political division of the federal Union, is situated between latitudes $24^{\circ} 30'$ and 31° north, and longitudes 80° and $87^{\circ} 45'$ west from Greenwich. Its greatest length from north to south is three hundred and eighty-five miles, and from east to west three hundred and thirty-three miles. It is bounded on the north by Alabama and Georgia, on the east by the Atlantic Ocean, on the south by the Gulf of Mexico, and on the west by that Gulf and by the State of Alabama; embracing an area of 59,268 square miles, or 37,931,520 acres.

This portion of the continent was first discovered by Sebastian Cabot, who sailed under the English flag, but De Narvaez took possession of the country in the name of the Spanish sovereign in 1525. In 1564 a colony of Huguenots settled on the south bank of the St. John's, about eighteen miles above its mouth. This settlement, called Carolin, was completely destroyed by the Spaniards under Menendez in 1565, who in the same year established a Spanish colony at St. Augustine, the first permanent town on the continent of North America.

From this period Florida remained a Spanish colony until 1763, when the whole territory was ceded to Great Britain. It was retroceded in 1784. In 1819 Florida was purchased by the United States. A territorial government was established in 1822, and on the 3d of March, 1845, Florida was admitted to the Union.

The State has a coast line of more than eleven hundred and fifty miles, indented with a large number of spacious bays, harbors, and estuaries, affording great advantages for the development of trade, and safe and convenient retreats for vessels exposed to the violent gales which occasionally rage off this coast. On the Gulf coast the principal harbors are Pensacola, Appalachicola, St. Mark's, Cedar Keys, Tampa, Charlotte, and Key West; and on the Atlantic, St. Augustine, Fernandina, and Jacksonville on the St. John's River.

The numerous rivers of Florida afford great facilities for internal navigation, giving free access by steamers far into the interior, and rendering available extensive tracts of rich country which would otherwise remain unsettled for years to come. The St. John's, the principal river of the State, rises in the marshy lands of Brevard County, and flowing in a northerly direction nearly parallel with the Atlantic coast, through an exceedingly level country, empties into the ocean near the northeast corner of the State. For one hundred and fifty miles from its mouth it has an average width of nearly two miles, and is navigable for large sea-going steamers as far as Pilatka, and for smaller craft nearly to its source. Many of its tributaries are also navigable for considerable distances, and it is estimated that this river and its branches afford one thousand miles of water transportation. Indian River is a long lagoon stretching along the Atlantic coast for a distance of one hundred miles, and its general character is similar to the St. John's in the lower part of its course. It is now proposed to connect these rivers by a canal, which would secure continuous inland navigation from

the mouth of the St. John's to Jupiter Inlet, a distance of more than two hundred and fifty miles. The St. Mary's River, forming the common boundary between Northeastern Florida and Georgia, is navigable for steamers to the town of St. Mary's. The principal rivers flowing into the Gulf from this State are the Caloosahatchee, Suwannee, Appalachicola, Ocklockonnee, and Perdido, each of them navigable for a considerable distance. There are, in addition to the rivers above mentioned, numerous lesser streams, navigable for small boats, coursing through almost every section of the State, so that there are few localities remote from water transportation.

A chain of lakes extend through the middle of the peninsula, the largest of which are Orange, Apopka, Cypress, Istopoga, and Okecho-bee; the last named extending over an area of more than six hundred and fifty square miles.

The southern portion of the peninsula of Florida consists mostly of an extensive swamp or marsh, called the "Everglades," which, with the exception of some tracts elevated above the general level, is subject to inundation during the greater part of the year. North of the Everglades the country is generally level, the most elevated point in the central portion of the peninsula being considerably less than two hundred feet above the level of the sea; from this point the surface slopes gradually toward the coast on either side. Between the Suwannee and the Appalachicola the surface is more elevated and occasionally diversified with hills; west of the Appalachicola the surface is generally level.

Four-fifths of the entire State is covered with heavy forests, consisting of yellow and pitch pine, live and white oak, cypress, hickory, ash, birch, cedar, magnolia, and other timber. On the dry lands the yellow and pitch pine attain great size, and furnish the finest quality of pine lumber. Large quantities of turpentine and rosin are made from the pitch pine, furnishing employment to a great number of persons. It is estimated that there are thirty thousand square miles of heavy pine forest in the State. The different varieties of oak, the hickory, ash, and birch, are found on the moist lands along the streams or on the margins of swamps, and the swamps are densely covered with cypress, magnolia, and sweet-bay. The timber of the cypress resembles the basswood of the North, is as easily worked, and is especially adapted for fork, rake, and broom handles, and for pails and tubs. The timber of the magnolia is similar to basswood in color and fineness of grain, it is susceptible of a fine polish and adapted to a variety of uses. The sweet-bay furnishes a handsome quality of lumber and is suitable for cabinet work. The abundance of material, at the cheapest rates, and the accessibility by water communication, offer great inducements for the manufacture of lumber, wooden-ware, and all kinds of tools made of wood.

The lands of Florida are variously designated as high and low hummock, swamp, savanna, and the several qualities of pine lands. The high hummocks, elevated above the general surface and gently undulating, are celebrated for their great fertility. The soil is formed of a fine vegetable mould, combined with sandy loam, and is, in many places, two feet in depth, with a substratum of limestone, clay, or marl. This soil is not as much affected by drought as other lands and rarely suffers from too much moisture, and, owing to the small amount of labor required to work it and its extraordinary productiveness, is, for general purposes, held in higher estimation than any other description of land in the State. These lands are usually heavily timbered with oak, magnolia, laurel, and other valuable timber. The low hummocks are in places

subject to inundation during wet seasons, but when drained are peculiarly adapted to the cultivation of sugar cane. They are generally timbered with several varieties of oak, magnolia, and bay. The savannas lie along the margins of streams and in detached bodies; the soil consists of exceedingly rich alluvion, which yields abundantly in dry seasons, but needs ditching and diking in ordinary seasons. These lands, when reclaimed, produce enormous crops of rice and sugar cane. The Everglades of Florida extend over an area of ninety miles in length by forty in width, or about three thousand six hundred square miles. They resemble an immense lake studded with a vast number of islands, varying from a fraction of an acre to hundreds of acres in extent. These islands are generally covered with dense thickets of shrubbery and vines and occasionally with pines and palmettos. With the exception of the islands, the surface is covered with water from one to six feet in depth, out of which grows from the vegetable deposit at the bottom a tall, rank grass. The soil of the islands is exceedingly rich and well adapted to the growth of plantains and bananas.

The climate of Florida has been pronounced one of the most delightful in the world. The winters are mild and pleasant, the summers, embracing seven months of the year, tempered by the daily recurring sea breezes, are seldom oppressive. The thermometer rarely rises above 95° , or falls below 30° , F. From observations extending over a period of one hundred years, recorded in the Spanish archives at St. Augustine, it is shown that the mean temperature of the winter months averages a little above 60° , and of the summer months 86° . The winters of East Florida are usually so mild that many of the most delicate vegetables and semi-tropical plants receive no injury from cold, and the orange, banana, plantain, guava, and other tropical fruits flourish luxuriantly. When the temperature does fall below the freezing point, the cold weather lasts but a few hours, and seldom occurs more than once or twice in the month of January, which is the severest of the season. In West Florida the temperature of the summer is a little above, and of the winters a little below, that of the eastern coast. During the months of March, April, May, and June frequent showers occur. With July the rainy season commences, lasting till the middle of September, and although during this season there are few days without rain, it seldom rains the whole day. These rains last about four hours each day, falling in heavy showers, and are usually accompanied by thunder and lightning. The annual fall of rain is fifty inches, the greater part of which falls during the productive season, much to the advantage of the agriculturist, while during the winter, when but little rain is required, it seldom falls. There are, occasionally, as in every other State, droughts of long duration, and sometimes a superabundance of rain; but the seasons are remarkably regular and well adapted to the growth of all the products of a semi-tropical climate.

Eastern Florida, especially St. Augustine, has long been a resort for invalids from all parts of the world. Persons suffering from pulmonary diseases find in the mild climate, balmy breezes, and sunshine of this favored region, immediate relief and often a permanent cure; indeed, there are now living in this State, in excellent health, many restored, who would, had they remained in the trying climate of the North, have long since gone down to a premature grave.

The soil of Florida is generally a light, sandy loam, with a substratum of clay, and sometimes intermixed with the latter. It is of all qualities, from the dry sand of the pine barrens to the fertile hummocks and

bottom lands, and in the marshes are inexhaustible vegetable deposits, which make most excellent fertilizers. The pine barrens, the poorest lands in the State, although, at first sight, apparently worthless for agricultural purposes, are, in reality, very productive when properly cultivated, experience having proved that they are eminently adapted to market gardening. In the order of productiveness the swamp lands rank first, the low hummocks second, the high hummocks third, and the pine, oak, and hickory lands fourth. The swamp lands are of comparatively recent formation, and are still receiving additions to their surface. In the cultivation of these lands ditching is indispensable, but they are intrinsically the most valuable lands in the State, being as fertile as the hummocks, and much more durable. They are especially adapted to the cultivation of the sugar-cane, and crops of four hogsheads of sugar per acre are not uncommon. The low hummocks require some ditching, and are also suitable to the cultivation of cane. Of the adaptability of the high hummocks for general cultivation mention has already been made.

There is probably no other State in the Union where so great a variety of the products of the soil can be successfully cultivated as in Florida. Nearly all the grains and fruits of the temperate zone may be raised in the northern part of the State; the eastern and central portions of the peninsula produce the various semi-tropical fruits in abundance, and in that portion of the State south of the line of frost the fruits of the tropics may be cultivated without difficulty. Every section of the State is adapted to the growth of Indian corn. On the rich bottom lands the average crop is fifty-five bushels to the acre. The corn crop for the year 1868 was 3,000,000 bushels. Cotton has hitherto been the staple production, but, in view of other more profitable branches of agriculture now engaging attention, it is doubtful whether it will continue to be raised in as great quantities as formerly. There were produced in the State, in 1860, 63,322 bales of ginned cotton, and the crop of 1868, though somewhat less in quantity, exceeded in value that of 1860. The short staple or upland, and the long staple or sea-island cotton, are both cultivated, the former being usually grown in the western part of the State and the latter in the eastern. The yield of the short staple is from two to three hundred pounds per acre on ordinary soils, but with good care, upon rich land, five hundred pounds may be produced. Under favorable circumstances from three to four hundred pounds of the long staple can be grown upon an acre. The soil and climate of Florida are eminently adapted to the growth of sugar-cane, though its culture has not hitherto been extensive, owing doubtless to the general impression that a large capital is absolutely necessary to the success of this branch of agriculture. Recent experiments, however, have shown that this is not the case, as a number of proprietors cultivating small areas have received as great profit from the cane as could be derived from any other product. In Volusia County one field of ten acres produced at the rate of 1,500 pounds of sugar and 300 gallons of molasses to the acre. The ordinary yield of sugar per acre in Florida is nearly twice that of Louisiana, and the cultivation much easier. Cuba tobacco was grown in some parts of the State before the war, but its cultivation has of late been neglected. The average yield of this plant is 700 pounds per acre. Sweet potatoes produce abundantly in all parts of the State, and next to Indian corn form the principal article of vegetable food of the masses. Irish potatoes, although not so productive as in the North, may yet be made an exceedingly profitable crop, as they may be planted

in January, and ripe in May, when they can be shipped at a small expense to northern markets and sold for good prices.

A large area of the lowlands is well adapted to the culture of rice, the average yield being forty bushels to the acre. During the British occupation indigo was the main staple, but it is not at present cultivated. The plant now grows wild in many parts of the State. Sisal hemp, introduced from Yucatan, has proved a great success. It may be grown anywhere south of the frost line, and with very little care a ton of cleaned hemp can be made to the acre, worth \$300 per ton. Coffee could doubtless be successfully grown in the southern portion of the peninsula. The pea-nut, or ground pea, produces abundant and remunerative crops. Arrow-root grows wild in the southern part of the State. Wheat has been occasionally raised in Northern Florida, but it is an uncertain crop. Rye and oats are cultivated to a considerable extent, but chiefly for forage. All varieties of hemp grow luxuriantly, and may be cultivated with every assurance of remunerative returns.

Almost every description of garden vegetables found in the markets of this country can be raised here with great success. Owing to the fact that the season is from four to six weeks earlier than in any other portion of the country, many vegetables, including tomatoes, peas, beans, cucumbers, potatoes, melons, cabbage, and beets, may be shipped to northern ports at great profit, and with the establishment of direct lines of steamers between the ports of the State and the principal northern ports, thus avoiding the delays and injury of transshipment at Savannah or Charleston, the gardeners of Eastern Florida will be enabled to place vegetables in the northern markets in good condition long in advance of those of other localities.

In this genial climate all the semi-tropical fruits, such as the orange, lemon, lime, olive, fig, citron, pine-apple, banana, guava, and the palm, are produced in as great perfection as in the more tropical climate of Brazil and the West Indies, and with far less attention and greater immunity from injury by insects or vicissitudes of climate than the common fruits of northern orchards. The oranges are especially celebrated for their great size and superior flavor. It is not known whether this fruit is a native of Florida, or whether it was introduced by the Spaniards, but it is now found growing wild in almost every section of the State. A large number of orange groves have been established within the past few years, and the exportation of the fruit is rapidly becoming one of the most important branches of trade. The groves are established by transplanting the wild orange trees during the winter and budding them in the summer with the sweet orange. Raised from the seed, the orange begins to bear in from seven to ten years, but the budded trees generally produce fruit in three years. The yield of single trees varies from 100 to 10,000 oranges, according to age, situation, and treatment. One hundred trees are planted to the acre, and as the fruit can be sold on the trees at \$15 to \$20 per thousand, enormous profits can be derived from a small area of land. The lemons of Florida are far superior to those of Sicily, Italy, or Spain. The lemon, lime, citron, and shaddock are propagated in the same manner as the orange; all of them in greater perfection than in other countries. The pine-apple is grown, with slight protection in winter, as far north as St. Augustine, but one hundred miles south of this point they are produced in great perfection, frequently weighing nine or ten pounds each. The paw-paw, or bread fruit, a native of South America, though not much cultivated, is worthy of attention. It has a pear-shaped fruit of light

yellow color, and is similar to a very ripe musk-melon in taste and flavor. The tree is a perpetual bearer and yields enormous quantities of fruit, a single tree producing enough for a large family. The milky juice of the unripe fruit and the powdered seeds are a powerful vermifuge, but the most extraordinary property of the tree is that of rendering the toughest meat or poultry perfectly tender by steeping for a few minutes in the milky juice. The banana may be successfully cultivated as far north as Fernandina, and where once established, a plantation of this fruit needs no renewal, and one acre will produce as much food as forty-five acres of potatoes. Figs, pomegranates, olives, and various kinds of berries are produced in abundance. South of latitude 28° north the date palm is grown with great success. Apples and pears have not been so successful. The peach, the nectarine, and the plum do well, and are less subject to disease and injury from insects than in the north. The grape grows luxuriantly and is found wild in many parts of the State. The black and white Hamburg, Muscat, and other foreign varieties reach the greatest perfection. The Scuppernon is most generally cultivated, and makes excellent wine. The guava, sugar-apple, alligator pear, plantain, and cocoanut are strictly tropical fruits, but they may all be raised without difficulty in the southern portion of the peninsula.

To the stock-raiser Florida presents every facility that could be desired. There is never any necessity for housing cattle, which will maintain themselves in good condition throughout the year entirely without care, fattening upon the many varieties of nutritious wild grasses that cover a large portion of the country. In the southern portion of the State the extensive savannas and moist prairies produce tall grasses which afford excellent pasturage. In the forest the oaks furnish an abundant mast upon which hogs readily fatten, these animals being found throughout the State half wild and generally in good condition. Sheep do well in Florida, furnishing a superior quality of mutton, although the wool is not of as fine a quality as in the North. The number of horses in the State in February 1869 was estimated at 7,000; mules, 6,600; oxen and other cattle, 170,600; milch cows, 81,000; and hogs, 103,500. The total value of the live stock was estimated at \$5,007,939. Game, fish, and oysters exist in great abundance. The oysters of St. Andrew's Bay and Indian River are celebrated for their size and quality. The bays, rivers, inlets, and lakes swarm with mullet, bass, sheepshead, trout, and many other varieties of fish. Deer, bears, squirrels, ducks, and turkeys are found throughout the State. Large quantities of sponge are annually gathered along the coast; and on the Gulf coast and among the keys, where the water contains a larger per cent. of salt than the ocean itself, there are excellent locations for the establishment of salt works.

Tallahassee, the seat of the State government, is situated in Leon County, twenty-five miles north of the Gulf. The city, occupying an elevated site, is laid out in rectangular blocks and contains the State-house, court-house, and Presbyterian, Methodist, and Episcopal churches. The adjacent country is remarkably fertile, and is the most populous in the State. The city is connected by railroad with St. Mark's, Pensacola, and Jacksonville. The population in 1860 was 2,128.

Pensacola, the county seat of Escambia County, is on the western shore of Pensacola Bay. Its harbor has twenty-one feet of water on the bar, and is one of the safest harbors on the Gulf. The population of the city is about 5,000.

Key West, on an island of the same name, occupies an important po-

sition in a military point of view. Its harbor is capacious and easily accessible for ships drawing twenty-two feet of water. The entrance to the harbor is defended by Fort Taylor, a large, costly structure.

St. Augustine, one of the largest places in the State, is situated on the north side of Matanzas Sound, about two miles from the sea. It is the oldest town in the United States, and has for many years been a noted resort for invalids. It is defended by Fort Marion, erected by the Spaniards more than one hundred years ago.

Appalachicola, Jacksonville, and Fernandina are among the other principal towns in the State.

During the year ending June 30, 1870, the lines of the public surveys were extended over 407,333 acres, making the total quantity surveyed in this State up to that date of 27,103,768 acres.

Of the entire area of the State, 37,931,520 acres, there remained unsold and unappropriated at the date above mentioned, 17,287,909.31 acres.

The Islands of Cuba and San Domingo may be regarded as a prolongation of the Florida Peninsula, from which they are separated only by narrow and comparatively shallow channels. The introduction into these islands of modern agricultural improvements, the opening of their mines, and the invigoration of their industries by American enterprise and a stable government, will bring the people of the West India group into intimate connection with the people of Florida by railroad communication, extending to the southern extremity of the peninsula and eastward through Cuba, Hayti, and San Domingo, which would be broken only by ferries across the Strait of Florida and the Windward Channel respectively. By such a line a vast commerce would be built up in the exchange of the manufactures and agricultural products of the more northern States for the tropical fruits, woods, and minerals of the southern portion of Florida and the islands in the vicinity; and over such a thoroughfare also would throng multitudes seeking the milder latitudes for the winter months, or the bracing climate of the North during the summer heats. As an indication of the future of the West India Archipelago, the following facts as to the commerce which existed there prior to the revolution in Hayti are presented:

The exports of the French portion of the island in 1789 amounted to \$38,000,000, and the aggregate produce of the island, including the Spanish portion, was nearly \$92,000,000, while its imports were no less than \$50,000,000. Sixteen hundred vessels and twenty-seven thousand sailors were employed in conducting all the branches of this colonial traffic.

The island is as prolific now as it was eighty years ago, and with modern improvements in cultivation, new processes of manufacture, and under a sound and permanent government, a commerce of much greater extent and value could, beyond doubt, be created within a short period of time, while the more perfect utilization of the resources of the country would not only induce a vast immigration, thereby adding to the value of real estate in this beautiful garden spot, but would furnish attractive and lucrative employment to elements of its population now without permanent industries.

ALABAMA

is bounded on the east by Georgia, on the west by Mississippi, on the north by Tennessee, and on the south by Florida and the Gulf of Mexico, having a gulf coast of sixty miles. A part of the State, form-

ing a narrow strip between Florida and Mississippi, extends to the Gulf of Mexico, in $30^{\circ} 15'$ north latitude, but the main body of the State lies between 31° and 35° north latitude, and from $85^{\circ} 10'$ to $88^{\circ} 31'$ west longitude, being 280 miles long, with a general breadth varying from about 140 miles in the north to about 200 in the south. The area of the State is 50,722 square miles, or 32,462,080 acres.

This State is of a level surface, except in the northern portion, which is mountainous, the Blue Ridge extending through it, but attaining here no great height. Declining generally from this region toward the south, the State presents a vast expanse of prairies with gentle swells, and reaching at length a point but little raised above the sea level.

The principal rivers are the Mobile, Alabama, Tombigbee, Chattahoochee, Black Warrior, and Tennessee. The last mentioned passes through the northern part of the State, with a circular sweep from east to west, receiving no considerable tributary on its southern side within Alabama, and flowing into the Ohio at Paducah, Kentucky. The other rivers mentioned flow into the Gulf of Mexico. Nearly all the waters of the State fall into the Mobile River, by which principally the southern slope is drained into the Gulf. The eastern border is watered for several hundred miles by the Chattahoochee, a large stream, but having no considerable tributaries from this State. The Alabama and Tombigbee, both large rivers, form, by their junction, fifty miles above Mobile Bay, the Mobile River, which empties into that bay. A few miles below the junction the Tensaw issues as a branch from the Mobile, and reaches Mobile Bay at Blakeley, after having been augmented by another stream from the Alabama. The Tombigbee, coming from Mississippi, unites with the Black Warrior, which flows from Northern Alabama, and thus augmented, unites with the Alabama to form the Mobile. The Black Warrior is navigated by steamers for 285 miles, and the Alabama for about 300 miles, although with interruptions in the dry season. The Conecuh, Perdido, and Choctawhatchee are smaller rivers. Mobile Bay is the main outlet of the navigable waters of the State, being about thirty miles long and from three to eight broad, with fifteen feet of water at low tide at the main entrance. There is steam-boat navigation in the State for nearly 1,500 miles.

In the southern portion of the State is a region extending for 132 miles north from the Gulf of Mexico, and 40 from the Florida State line, across the State, and embracing an area of 11,000 square miles, which contains extensive pine forests, yielding excellent timber, tar, and turpentine, while on the lowlands along the rivers in the same district are found the different varieties of the oak and the cypress, noted for the durability of its timber. The soil in this region is naturally adapted to raising grapes, apples, peaches, and pears, and corn and cotton may be produced. It is also favorable for stock-raising, the pine forests affording natural pasturage for cattle. It is watered by the Alabama and Tombigbee Rivers, and there are also good railroad facilities. An abundant supply of fish and oysters is obtained from the waters of the Gulf and Mobile Bay.

North of this for about 102 miles on the western and 60 on the eastern line of the State is a section of country characterized by extensive prairies, an excellent climate, and rich soil, which is highly productive of cotton, corn, and provisions. This is one of the most fertile districts, most healthy and best adapted to agricultural pursuits of any in the South, while by its railroad and river facilities it has easy access to market. The land here will produce from 50 to 60 bushels of corn, or 800 to 900 pounds of seed cotton per acre; and tracts which, before the

late war, were held at from \$30 to \$50 per acre, may now be had at from \$5 to \$10.

For about thirty-five miles further north, across the State extends a section in which the soil is poor, but which is healthy, and where numerous streams afford good water-power, favorable to manufacturing purposes, and with good railroad facilities.

In the northeastern part of the State is the mineral region, extending about one hundred and sixty miles in a southwesterly direction, with an average width of eighty miles. Here are found white, black, and variegated marbles, soapstone, flagstones, graphite, or plumbago, and granite, with coal-fields, covering four thousand square miles, from one to eight feet thick, the coal being bituminous, and well adapted for generating steam, and for the manufacture of gas, coke, and iron. Near these coal-fields are extensive beds of limestone, sandstone, and iron ore. Throughout this mineral district there are numerous fertile valleys, in which wheat, corn, and cotton are produced, and which are well adapted to stock-raising.

The northwestern portion of the State is a stock and agricultural region, producing cotton, corn, grain, grapes, and stock, in which the climate is healthy, the soil rich, and before the war, cultivated lands were valued at from \$30 to \$50 per acre; now, for the same, the prices are from \$5 to \$10.

Alabama was originally a part of Georgia. The Territory of Mississippi was organized in 1798, including the present States of Alabama and Mississippi. Florida then belonged to Spain, and intervened between the Territory of Mississippi and the Gulf of Mexico, excluding the former from the sea. In the war of 1812, the United States took possession of that portion of Florida lying between the Perdido and Pearl Rivers, and it was afterward united to Mississippi Territory. After General Jackson, by his decisive war with the Creeks, removed all apprehension of Indian hostilities, the country fast filled up with population until, being divided, a part was admitted as the State of Mississippi in 1817, the other portion continuing a Territory until 1819, when it was admitted as the State of Alabama.

The State is well provided with schools and churches, newspapers, periodicals, and institutions of public benevolence, the Federal Government having liberally appropriated from the public lands for the support of common schools and a State university, from which there has been realized, for the former purpose, \$1,807,438 91, and for the latter, \$300,000.

Among public institutions are the Alabama Insane Hospital, at Tuscaloosa; the Medical College of Alabama, at Mobile; the Alabama Institution for the Deaf, Dumb, and Blind, at Talladega, and State University, at Tuscaloosa.

The railroads, completed and in prospect, present a very complete system by which all portions of the State will be united with the general railroad system of the country, there being now in operation over 1,036 miles of road, the cost and equipment of which is estimated at \$36,421,000.

The principal city is Mobile, the only seaport of Alabama, being located on the Mobile River, near where it enters Mobile Bay. It was founded in its present location in 1711, and was incorporated as a city in 1819. In 1860, its population was about 30,000. The city is well built, with streets regularly laid out, paved and lighted with gas, and handsome public buildings. Mobile has an extensive trade and some manufacturing business. It exports lumber, turpentine, rosin, oil, &c., but cotton is the principal article of export.

Montgomery, the capital of the State, is a city of over ten thousand people, improved with public buildings, churches, seminaries, banks, newspapers, marble yards, iron foundries, and saw-mills, situated on the Alabama River, 415 miles above Mobile, connected with other portions of the State by railroads and by river navigation open at all seasons of the year. Cotton is extensively shipped from Montgomery, which was laid out in 1817, and made the seat of government in 1846.

As places of less importance may be mentioned, Tuscaloosa, Wetumpka, Hartsville, Marion, Talladega, Florence, Athens, and Jacksonville, having a population of from one thousand to three thousand five hundred, and Batesville, Carrollton, Uniontown, Pickinsville, Somerville, Blakeley, Decatur, Eufaula, Tuscumbia, and Claiborne, with not exceeding one thousand.

Alabama has almost every variety of useful timber, as yellow pine, the several varieties of oak, sweet and black gum, poplar, ash, walnut, hickory, locust, chestnut, red and white cedar, dogwood, maple, and elm. In agriculture the State holds a high rank, and, considering its superior natural advantages, there is no reason why it should not also excel in manufacturing and in the development of mineral riches.

As a long-settled and highly-improved State, yet with comparatively low-priced lands, Alabama presents inducements to immigration not surpassed by those of any other. In addition to the large quantity of land in private hands, which may be had at a cheap rate, the United States still retain public lands there to the extent of 5,939,632.87 acres, all of which has been surveyed and is open to entry under the homestead law.

MISSISSIPPI

adjoins Alabama, having that State for its eastern boundary, with Tennessee on the north, Louisiana and the Gulf of Mexico on the south, and Louisiana and Arkansas on the west, and lying in the shape nearly of a parallelogram between $30^{\circ} 13'$ and 35° north latitude, and $88^{\circ} 7'$ and $91^{\circ} 41'$ west longitude. From the Pearl River on the west to the Alabama State line on the east extends a narrow strip of land south of the main body of the State below latitude 31° north to the Gulf of Mexico; the extreme length of the State north and south being 332 miles; average breadth, 142 miles, varying from 78 miles south of latitude 31° north to 189 on that parallel, and 118 on the north line; area, 47,156 square miles, or 30,179,840 acres.

The surface of Mississippi is of an undulating and diversified character, with a slope in general to the southwest and to the south, which is indicated by the course of the rivers, while of a small section the waters flow to the southeast and north. The State has no mountains, but there are numerous hills of moderate elevation, some of which, terminating abruptly upon a level plain, or the bank of a river, are called bluffs or river hills. The country contiguous to the Mississippi River contains many of these hills, from which circumstance it is known as the bluff region, extending from ten to twenty-five miles inland, and is one of great fertility.

This State is well watered, having the Mississippi on its western border for more than 500 miles of circuitous windings, with a great number of other streams, and several navigable rivers. The Tennessee River flows along the northeastern corner, and the Tombigbee, rising in the northern section, is navigable by steamboats to Columbus. The Yazoo River, formed by the junction of the Yallobusha and Tallahatchie, which rise in the northern part of the State, near the headwaters of the Tom-

bigbee, flows into the Mississippi River, after a course of about 200 miles, and is navigable for some distance by boats. The Big Black, Bayou Pierre, and Homochitto are also tributaries to the Mississippi. The Pearl River, rising in the center of the State, the Pascagoula, formed by the junction of the Chickasawhay and Leaf Rivers, empty, by a southerly course, into the Gulf of Mexico and the lagoons connected with it. There are numerous other streams watering extensive districts and fertilizing the soil.

This region was visited first among Europeans by De Soto and his companions in their expedition, about 1540, in search of the new El Dorado then generally believed in and sought for by adventurers to America. The Spaniards, however, made no settlements, and the French afterward planted a colony here, having given the country the name of Louisiana. What is now Mississippi was ceded by the French to Great Britain in 1763, and after the Revolution, population having increased, the Territory of Mississippi was created by act of Congress in 1798, and its territorial limits having been variously modified, was at length admitted, as it at present exists, a State of the Union, in 1817. Its population in 1820, three years after, is given as 75,448, and in 1860, as 791,305.

Natchez, in this State, is a city situated on the east bank of the Mississippi River, 280 miles by water above New Orleans, built on the summit of a bluff 150 feet above the water, and on the narrow strip of land between the foot of the hill and the river, the latter portion being called Natchez Landing or Natchez-under-the-Hill; population in 1860, 6,616. The streets are regular, lighted with gas, generally graveled in the roadway, and lined with shade trees. The city is provided with churches, schools, newspapers, benevolent institutions, and the residences of many wealthy families are in the vicinity. The business is mainly in cotton. There is daily steam communication by the river with New Orleans, Vicksburg, and Memphis, and a stage-line connects at Brookhaven with the New Orleans and Jackson Great Northern Railroad. The climate is pleasant and salubrious, the thermometer seldom rising above 90°. Fort Rosalie was built here by the French in 1716, and this was the first capital of the Territory of Mississippi.

Vicksburg is another city situated on the Mississippi, 408 miles above New Orleans, and 44½ miles west from Jackson, with which it connects by railroad. Population in 1860, 4,591; being the chief commercial town between Memphis and New Orleans. The residences are situated on a bluff, and the business portion of the town on the river bank below. It is well provided with churches, schools, seminaries, newspapers, and before the civil war exported from 100,000 to 130,000 bales of cotton annually.

Jackson, the capital of the State, is situated on the right bank of Pearl River, 45 miles east from Vicksburg, at the intersection of the Southern Mississippi and the New Orleans, Jackson and Great Northern Railroads; population about 4,000. The Pearl River is navigable to this point, and from 30,000 to 40,000 bales of cotton are here annually shipped. The United States consolidated district land office for Mississippi is located at Jackson.

Grand Gulf, Warrenton, Princeton, Tallalula, Greenville, Bolivar, Commerce, and Concordia, on the Mississippi; Canton and Granada, on the Yallahusha; Holly Springs, Pearlinton, Biloxi, Shieldsboro, Mississippi City, and Pascagoula, are important places.

Railroad improvement in this State has so far progressed that there are now about 898 miles of road completed, which, with the roads pro-

jected, will place all the commercial points in connection with the great marts of the world.

As an agricultural State Mississippi has great advantages, the soil being very fertile and the climate remarkably equable. It produces the grains, wheat, rye, oats, Indian corn, barley, buckwheat, with Irish and sweet potatoes, peas and beans, hemp, sugar, and tobacco, while the fruits of temperate climates grow in perfection; also, the fig and orange in some parts.

Cotton is the great crop of the State, the product of that staple comparing favorably with that of any other State of the Union.

The foreign trade of Mississippi is indirect, being almost entirely through New Orleans and Mobile, and the exports consisting mainly of cotton and lumber, but the coasting and river trade is great, employing a large tonnage.

This State presents to immigrants, in a great degree, the inducements usually found in a new country, combined with the advantages of long-established civilization, lands being cheap, all modern improvements already inaugurated, and the United States having still undisposed of 4,648,453.27 acres of public lands, already surveyed, and offered as homesteads to actual settlers at a charge merely nominal. Among these lands are some of the most fertile in the State, and capable of producing all the most valuable staples.

LOUISIANA

has an extensive front on the Gulf of Mexico of about 300 miles, with an irregular coast line, including bays and other indentions, of 1,256 miles. It is bounded by Mississippi on the east, Texas on the west, Arkansas on the north, and the Gulf of Mexico on the south, lying between latitude $28^{\circ} 50'$ and 33° north, and longitude $88^{\circ} 40'$ and $94^{\circ} 10'$ west; extreme length, east and west, 290 miles; extreme width, north and south, 200 miles; area, 41,255 square miles, or 26,403,200 acres.

This State is of a low surface, generally level, having some hilly ranges of little elevation in the western part, and many basins or depressions of the soil. The southern coast is composed mainly of sea marsh. The vast level of the prairies, covering about 4,000,000 acres, extends north of the marsh, and but slightly elevated above it, the highest elevation in any portion of the State being not more than 200 feet, while in the south about one-fourth part is not more than ten feet above the sea, and is annually inundated by the spring floods. In the north and west the country is somewhat broken and diversified with low hills. It is estimated that, of the entire surface of the State, about 8,200,000 acres consist of swamp and lands subject to overflow.

Louisiana has superior water facilities. The Mississippi is its boundary on the east for 450 miles. It then passes through the interior of the State for 350 miles to the sea. The Atchafalaya, which has for tributaries the Teche and Courtableau, with Bayous Plaquemine, Lafourche, and the Manchac, which receives the waters of the Amite, are all outlets of the Mississippi. Red River, the most important tributary of the Mississippi in the State, reaches the latter river after a course of 2,000 miles, and is navigable within the State for 500 miles. The Black River, which is its principal tributary, is formed by the union of the Tensas, Washita, and Catahoula or Little River, all considerable streams and navigable for steamboats. The Bayou du Bon Dieu is also a large river, which flows into the Red River. The Vermillion, Mermentau,

and Calcasieu spread out into shallow lagoons on the low marshy strip of the State on the Gulf coast. The Sabine, a considerable stream, bounds the State on the west, dividing it from Texas from its mouth to the latitude of 32°, while it has the Pearl River on its eastern frontier, separating it for some distance from Mississippi. There are numerous bays and inlets on the coast, and lakes in the interior of the State, the extent of steam communication being estimated at 2,000 miles, available at all seasons.

Louisiana was first explored and occupied by the French, by whom it was ceded to Spain in 1763; the whole vast tract lying west of the Mississippi was then included under this name. In 1800 Louisiana was ceded to France, and, in 1803, by that power was transferred to the United States for \$15,000,000. In 1804 the southern part of the country was set off as a Territory under the name of the Territory of Orleans, to which was afterward added a portion of territory lying between the Pearl River and Mississippi south of the thirty-first parallel, obtained from Spain in 1810, and in 1812 was admitted into the Union under the name of Louisiana. In 1810 the population was 75,556; in 1860 it had increased to 708,002.

Included within the limits of this State is New Orleans, the emporium of the Mississippi Valley, the second city in America in the amount and value of its exports, the greatest cotton market in the world, and far beyond all other cities in the number of steamboats employed in its trade. It is situated on the left bank of the Mississippi River, about 100 miles from its mouth, the older portion of the city being built on the convex side of a bend of the river, from the shape of which it has been called the "Crescent City."

The population of New Orleans in 1803, when Louisiana was acquired by the United States, was about 8,000; in 1860 it was 168,823. It embraces many foreigners, principally French and Spanish, and the French and Spanish languages are extensively spoken. The city has numerous fine public buildings, large and elegant private residences, churches, schools, and institutions of benevolence. Its commercial prominence is due to its favorable position near the mouth of the great river of the continent, making it the principal point of shipment for the products of the vast regions, to which that river presents the most eligible means of transportation, and its importance must increase in proportion to the growth of those regions in population and productiveness. New Orleans is the commercial capital of the State, having a consolidated district land office.

Baton Rouge, about 130 miles above New Orleans, on the river, contains about 4,500 inhabitants. Alexandria, on the Red River; Algiers and Gretna, opposite New Orleans; Bayou Sara and St. Francisville, on the Bayou Sara, and Carrollton, 7 miles above New Orleans, are important towns.

The State has railroads connecting New Orleans with the great lines reaching in all directions north and west, and other railroads are in progress.

Louisiana is well supplied with minerals—iron, lead, coal, lime, soda, copperas, gypsum, marl, and potters' earth existing in many places in the northern and western portions of the State, while copper and petroleum are said to have been recently found in several of the parishes.

This State has eminent advantages for the pursuit of agriculture, for which the character of the soil is very favorable. Along the "bottoms" of the rivers the land is exceedingly fertile, and a great proportion of what is now swampy might, at small expense, be reclaimed and rendered

highly productive. All parts of the State are traversed by numerous streams, the soil along which is very rich. The climate is favorable, being so far south that the temperature is rarely below the freezing point, while the heats of summer are rendered less severe by breezes from the Gulf. The valuable crops of the State are cotton and sugar, of the former of which the product in 1860 was 777,738 bales, or more than 11,000,000 pounds; and of the latter 221,726 hogsheads of 1,000 pounds each, and 13,439,772 gallons of molasses. Rice is also an important crop, and the quantity thereof produced in 1860 is stated at 6,331,257 pounds. The value of these three staples, at the prices ruling in 1860, is estimated at \$48,000,000. Indian corn, sweet potatoes, wheat, rye, oats, barley, Irish potatoes, tobacco, hay, and, among fruits, the apple, peach, quince, plum, and fig are produced. The agriculture of the State promises an indefinite expansion, as the extensive unoccupied tracts of fertile land come into occupancy of the immigrant, and are brought under cultivation with all the improvements which a more compact settlement will bring.

For stock-raising the prairies in the central portion of the State, with their excellent pasturage, offer superior facilities.

The United States still retain undisposed of in this State 6,427,543.65 acres of public land, of which 3,431,236.65 acres have been surveyed, and are subject to entry by actual settlers under the homestead law.

STATES IN THE VALLEY OF THE MISSISSIPPI EAST OF THAT RIVER.

OHIO.

This noble State, the oldest of the public domain, possesses a happy combination of advantages, including soil, climate, production, manufacturing capacity, commercial facilities, and geographical position, placing it in the first rank of American communities. To its wonderful resources for the accumulation of wealth, it adds all the charms of agreeable residence, affording scope for the grand development of a free civilization.

Ohio, the eastern portion of the old Northwestern Territory, which was ceded to the United States by the State of Virginia, which claimed the territorial sovereignty, first, by virtue of the original charter of King James, extending westward to the Pacific, and, secondly, by right of conquest, the British power having been subverted in this region by the celebrated expedition of Virginia troops under General George Rodgers Clarke. This State lies between the parallels $38^{\circ} 24'$ and 42° north, and the meridians $3^{\circ} 32'$ and $7^{\circ} 40'$ west from Washington. Its extreme length is 200 miles from north to south, and breadth 195 miles from east to west, giving an area of 39,964 square miles, or 25,576,960 acres. It has a navigable lake and river boundary of 630 miles, with a considerable extent of internal navigation afforded by its interior streams. Its position, with reference to the passes of the Alleghany Mountain chain, secures the transit of the great mass of travel between the East and the West, and especially between the commercial points on the Atlantic and Pacific coasts. To this, in part, is due the early development of splendid natural resources.

Ohio is remarkable to the student of our civilization as the first theater for the development of our public land system. The ordinance of 1785 of the old Continental Congress was the first essay for the discharge of the great trust imposed upon the General Government by the self-abnegation of the different States of the Union. Without the experience

since gathered, it is not wonderful that the earlier legislation upon this subject was discordant and fragmentary. It was embarrassed by the reservations of the States ceding the territory to the Union. Virginia stipulated for the reservation of 4,204,800 acres, between the Scioto and the Little Miami Rivers, nearly one-sixth of the State, to satisfy the surplus of the claims of her revolutionary officers and soldiers, after the exhaustion of the lands set apart for them in Kentucky.

The claim of Virginia was bounded by the forty-first parallel, to the north of which the territory was claimed by Connecticut under her colonial charter from the Crown of England. That State, reserving 3,800,000 acres along the lake shore west of the Pennsylvania line, surrendered the balance of her claims to the General Government. She afterward yielded the territorial sovereignty of this reserved area, but retained the disposition of the soil in her own hands. The proceeds of this disposal were made the basis of that splendid public school endowment which has given to Connecticut such a noble preëminence in the cause of popular education. The lands thus disposed of by that State are still known in Ohio as the Western Reserve, and are all embraced in eight counties lying along Lake Erie. To compensate the losses of those of her people whose houses were burned and whose property was plundered by British partisans during their destructive raids in the revolutionary war, she devoted 500,000 acres from the west end of her reservation. These have, on this account, been known as the fire lands.

The first seven ranges of townships surveyed under the ordinance of 1785 were appropriated, by act of June 1, 1796, to satisfy certain claims of officers and soldiers of the revolutionary army. The policy of land warrants calling for a specific area, locatable at the will of the military grantee, had not then been devised. These lands, not having been entirely appropriated by these patriotic beneficiaries, were, by act of July 3, 1832, laid open to general sale and settlement. The scrip principle, in rewarding our revolutionary heroes, then prevailed over all others.

Among the early errors of the land policy in this State was the sale, in large portions, to individuals and colonies. The Ohio Company's purchase, lying along the Ohio River, in the southeast portion of the State, was a case in point. Though it contemplated the disposal of 1,500,000 acres, yet, from a variety of causes, not more than 1,000,000 were paid for and patented. Symmes's purchase, including 311,682 acres, extends from the Ohio River northward, between the Great and Little Miami Rivers. Other tracts, reserved for special purposes, present anomalies in the working of the public land system, which our subsequent legislation, enlightened by experience, was enabled to avoid. The operations of the public land system in Ohio are practically closed.

By the census of 1860 it appears that, of the 25,576,960 acres, 20,472,141 acres were included in farms, but of these, 12,625,394 were improved, leaving 7,846,747 acres unimproved. The actual cash value of the farms was \$678,132,991, and the value of farm improvements, \$17,538,832; as compared with the census of 1850, these figures showed an increase of 2,474,648 acres, or 14 per cent. While the improved lands increased 2,773,801 acres, the unimproved decreased 299,253 acres; and the uninclosed area declined from 7,579,467 acres to 5,104,819 acres, or about one-third. The cash value of the farms increased during the decade \$319,374,388, or nearly 90 per cent., and the value of agricultural improvements \$4,788,247, or 38 per cent. It should be remembered that these aggregates represent the primitive gold value subsisting prior to the enormous expansion in the paper circulating medium, necessitated by the late civil war. The value of the live stock rose

from \$44,121,741 to \$80,384,819, or 82 per cent. A gratifying indication during that ten years was the diffusion of proprietary interest in the soil. The number of farms increased from 143,807 to 179,889, or 25 per cent., while the average acreage declined from 125 to 114. The population, meanwhile, had increased but 18 per cent., showing that a much larger proportion of land owners was found among the people. The increased stability of social order shown by this fact augurs well for the interests of democratic civilization.

During the ten years just passed, the record of which is now being made up in the ninth census, there is reason to believe that the development of the resources of the State has not been less rapid. The aggregate of improved lands in farms will show a great relative increase, as compared with the unimproved lands. The latter will have received large increments from the uninclosed lands, but this addition will not probably equal the increased area brought under cultivation. According to tables compiled under the authority of the Department of Agriculture, in 1867, the value of the farm lands had increased from 30 to 35 per cent. in seven years. It will be but a moderate estimate to assign 50 per cent. as the rate of increase for the entire decade. This will give the present aggregate of farm value at over \$1,000,000,000. The value of farm implements will be not less than \$25,000,000, and that of live stock not less than \$140,000,000. There are probably not less than 15,000,000 acres in Ohio devoted either to grazing or culture.

The soil in Ohio is of high average fertility, presenting but minor difficulties in its working. The proportion of the surface unavailable for any sort of cultivation is very small. The rich bottoms of the Miami and Sciota are noted for their enormous yields of corn, while the wheat culture predominates in the more northern regions. Other cereals are extensively cultivated and yield abundant and remunerative crops. It has been found, however, that the proportion of our breadstuffs raised west of the Mississippi is annually increasing. Ohio and the elder States erected out of the public domain find it profitable to resign these crops to the financial necessities of the younger States in which the maximum market value of production is accomplished with the minimum outlay of labor. Elder systems of agriculture can more profitably be applied to the production of the finer fruits and fibers, those more delicate branches of production which pertain to an advanced stage of settlement and civilization. Agriculture in Ohio is now passing into a higher development of principles and processes. Pioneer farming is necessarily confined to rudimentary ideas. In the massive resources of fertility held by a virgin soil, the first efforts to extract subsistence do not recognize the necessity of economizing this endowment, and in recuperating exhausted productiveness by a careful attention to the laws of nature. Hence, the settlement of a new country is necessarily accompanied by an immense waste of natural resources. The class of men that are fitted to break ground for cultivation are seldom qualified for the task of repairing their own waste of nature. They sell out their farms and settle upon fresh areas of virgin soil to subject them to the same processes. Meanwhile purchasers, less disposed to sacrifice the elevating influences of society, apply the resources of science and experience to the recovery of the fertility of the soil. Production, which had declined, now begins again to rise, and the accumulation of wealth becomes visible under the hand of intelligent industry. Ohio has passed through this preliminary stage, and has entered upon a higher agricultural development. The resources of science and skill are directed not merely to the extraction of the greatest possible crop from the soil, but also to

the restoration of its exhausted fertility, and to the permanent activity of its productive principles. While a steady increase of cereal production is manifest, the diversification of agricultural industry is no less prominent. The estimated crops of the great staples for 1868, as presented in the report of the Commissioner of Agriculture for that year, are as follows: Corn, 74,040,000 bushels on 2,177,647 acres; oats, 24,227,000 bushels on 835,413 acres; barley, 2,343,000 bushels on 104,133 acres; buckwheat, 992,000 bushels on 57,341 acres; total cereal crops, 119,736,000 bushels on 4,567,248 acres. Of potatoes, 7,200,000 bushels were raised on 91,139 acres; 11,000,000 pounds of tobacco on 13,513 acres; of hay, 2,030,000 tons on 1,561,538 acres. The total value of the above crops in the local markets was \$125,332,210.

The forest growth of Ohio is rich in variety and luxuriance, embracing nearly all the different species of oak, maple, hickory, poplar, sycamore, pawpaw, dogwood, beech, buckeye, &c. It is to be regretted that the earlier agriculturists found it necessary to despoil so large a portion of the soil of its forest growth, thus seriously affecting already the climatic conditions of the State. This error, however, has been recognized, and now, in different quarters, efforts are making to repair the waste by systematic tree-planting. The timber yielded by the forests of Ohio is excellent for builders' or manufacturers' use, while its great abundance met all the earlier draughts for fuel.

The mineral resources of Ohio are on a large scale. Though unendowed with mines of the precious metals, her deposits of useful minerals are numerous, extensive, and important. The main geological features of the State, excepting the drift formation of the north and the alluvions of the rivers and lowlands, embrace mostly the paleozoic or primary system. The lower silurian formations of the west are succeeded by the Devonian and carboniferous strata, the latter of which, in the eastern and southeastern portions of the State, cover an estimated area of 12,000 square miles.

Limestone crops out in all portions of the State, furnishing an abundant and admirable material for building. Clay is also abundant in all sections, and of superior quality for the manufacture of brick, tiles, and earthenware.

The coal deposits crop out of what are properly the foot-hills of the Alleghany Mountain system. It lies in accessible beds of easy working capacity, and furnishes the basis of a rapidly-increasing industry. In 1868 there were produced 55,000,000 bushels of coal. It is supposed that not over two-thirds of the actual product have been reported, and that the real aggregate will not fall short of 75,000,000 bushels.

The iron deposits are also quite extensive and valuable. The most profitable outcrops appear to be in Lawrence, Gallia, Meigs, Vinton, Athens, and Hocking Counties. The iron belt passing through these localities is about 100 miles long and 12 miles wide, abounding in specimens of very superior quality. During the year 1868 there were produced, according to the most reliable estimates, 208,746 tons, being an increase of 41,155 tons over the yield of the previous year, and of 126,956 over the yield of 1866.

Salt springs abound in the southeastern part of the State, and large quantities of this necessary product are annually manufactured.

The manufacturing capacities of Ohio are not less important and valuable than its mining and agricultural interests. The water-power afforded by the streams of different grades passing through the State is very extensive, while artificial motive power is found in the development of its coal mining interests. It has a workable coal area at least

double that of Great Britain, and under the same industrial activities will ultimately produce commensurate results.

The commercial facilities of Ohio are of the first order of advantage. Its central position makes it the great thoroughfare of trade between the Atlantic and Pacific slopes of the North American Continent.

Its river and lake navigation embrace not less than 800 miles. To these have been added several hundred miles of canals and 3,500 miles of railroad, involving an actual investment of capital of not less than \$200,000,000, carrying annually over 10,000,000 passengers and 13,500,000 tons of freight. The total value of the railway commerce has been estimated at \$1,250,000,000. This is probably not more than half the internal commerce of the State.

The climate of Ohio presents a considerable variety. Upon the watershed between Lake Erie and the Ohio River basins the cold increases to an equality with the same parallels in the Eastern States, on account of the cold winds of the north sweeping over the lake. In the southern part it is warmer, but nowhere of an enervating character. It everywhere presents a sufficient stimulus to bring out all the resources of the soil. Meteorological observations of considerable regularity and extent show that there is but little difference between the mean temperature of the water-shed line of the State and its northern boundary. Kelly's Island in Lake Erie is one-sixteenth of a degree warmer in winter than Urbana, one and a half degrees southward in latitude, while in summer it is but one twenty-fourth of a degree colder. The rain-fall of 1867 was 43 inches, being about 3 inches greater than the average of a few previous years.

The southern slope of Ohio is larger than the northern, as is seen by the greater length of the affluents of the Ohio over those of Lake Erie. The landscape presents every variety of tranquil beauty, though it lacks the great contrasts afforded by mountain scenery. A large portion of the surface is treeless prairie, with all the peculiar characters of that style of landscape. The woodland alternates with it in graceful variety, presenting a wide scope of choice localities of settlement, both for residence and for cultivation.

Rural life has especial charms in this State, which is now, by the wonderful extension of railway, telegraphic, and postal facilities, relieved of the embarrassments and drawbacks resulting from distance from the cities.

The accumulation of wealth, with the consequent increase of the facilities of civilization, is shown in the gradual increase of assessed values of personal and real estate. The assessment of 1869 was \$1,157,180,455, being a net increase over that of the previous year of \$13,719,069. According to the estimate of His Excellency the Governor the true gold value of property is more than double the assessed value. In 1868 this was placed at \$2,500,000,000. Ohio has 135 national and 118 State banks, with a joint capital of \$27,313,720. This mass of material prosperity is directed by splendid intellectual and moral forces. Provision is made by law for the education of nearly 1,100,000 of youth in the public schools, of whom about three-quarters of a million were actually in attendance. Nearly 12,000 school-houses, worth at least \$12,000,000, have been erected, and the noble work is extending both in means and influence. These schools, especially in the towns and cities, are graded and organized upon the most efficient system, and are rapidly approximating the highest rank among the educational establishments of the country. The general elevation of popular intelligence secured by these institutions is incalculable.

Besides the public schools there are four hundred and eighty-five private academies and high schools, and twenty universities and colleges. These higher institutions are generally well endowed and highly efficient. The grade of scholarship has been greatly elevated. Two of these institutions—the Ohio University at Athens, and the Miami University of Oxford, Ohio—have landed endowments from the General Government. In the earlier days of the history of Ohio these were the pioneer colleges of the great Northwest, and here have been educated and disciplined some of the best minds in the nation.

The most remarkable growth of the State is observed in the towns and cities. About fifty have been compared, showing rates of increase varying from twenty to two hundred per cent. during the present decade. Of these the largest is Cincinnati, with a population of over a quarter million. This city is one of the most active centers of trade and manufacture in the country. Though out-stripped by several younger rivals in some of the more showy elements of growth, she presents a massive aggregation of trade and industry, of wealth and refinement, of intellectual culture and moral influence, which is felt as a power in the country.

The natural and artificial communications of the city are very superior. It is one of the great railway centers of the Union, and is extending its connections of this character to new fields of enterprise in the West and South. Its position on the Ohio River places it in close communication with all parts of the country throughout the 17,000 miles of navigation of the Mississippi River system. These facilities for the commercial enterprise of the Queen City are used with great vigor and intelligence in building up the trade and production of the city.

The imports into the city by river and rail during 1868 were valued at \$280,063,948, which increased the following year to \$283,927,902. Of these the largest items were tobacco, cotton, pork and bacon, cattle, &c. The exports of 1868 amounted to \$144,262,138, and increased in 1869 to \$163,084,358. The total export and import trade for those two years respectively amounted to \$324,326,086 and \$456,011,260. During the current year it promises to aggregate at least half a billion.

The manufactures of this city embrace a capital invested of \$45,225,586. The value of the real estate used in manufacturing was \$36,853,783. The value of the product during the year was \$119,140,089. The number of hands employed was 59,354. Of this department of industry the largest investment was \$4,112,700 in the manufacture of clothing, producing \$11,207,696 during the year, and giving employment to 12,236 hands. The furniture business involved the investment of \$3,675,500, producing articles valued at \$5,927,417, and employing 3,796 hands. Distilled, fermented, and malt liquors absorbed capital amounting to \$7,488,000, producing \$15,609,798 and giving employment to 2,428 hands. Machinery was produced to the extent of \$4,246,810, with an investment of \$2,537,500, and employed 2,060 hands. Oils, soaps, and candles represented a capital of \$2,500,000 and a production of \$7,820,329, employing 1,217 hands. Tobacco and its preparations required \$2,217,500 of capital, showing an aggregate product of \$6,268,749, and employing 4,634 hands. The other leading articles of Cincinnati manufacture were books and newspapers, produced to the amount of \$2,849,447; boots and shoes, \$3,642,738; bread, crackers, &c., \$1,921,142; building materials, (not including brick and stone,) \$2,308,418; castings, stoves, and hollow ware, \$5,961,850; drugs, chemicals, &c., \$1,948,340; iron ore, \$4,000,000; lard, \$2,553,492; leather, \$2,270,446; provisions, \$12,301,033.

The foregoing represent only the more important products of manufacturing enterprise in the city. The genius of her artisans is constantly directed to the higher branches of art. During the past autumn a grand industrial exposition was held in the city, at which an astonishing and very unexpected display of American manufacturing industry was exhibited. All the indications are that Cincinnati will be one of the great manufacturing cities of the country. This fact indicates a noble future. A varied industry is the best foundation for an extensive and profitable trade.

Cleveland, on Lake Erie, has attained a population of nearly or quite 100,000; estimates founded on unfinished reports of the ninth census assigning an aggregate of 93,000. Its real and personal estate is estimated at \$90,000,000. Its lake commerce approaches \$200,000,000, while its railroad and canal trade is said to represent \$600,000,000. In 1867 there were nearly 10,000 entrances and clearances of lake vessels, with a tonnage of over three millions. There are 200 sailing and steam vessels owned at the port, with a tonnage of 45,000. There are \$13,000,000 invested in manufactures, producing \$44,000,000 in finished products. The coal trade involves an investment of \$3,000,000, showing a receipt of about 700,000 tons per annum, about half of which is forwarded. Of iron ore the annual receipt amounts to about 300,000 tons, of which about 50,000 tons are smelted in the city. Of 90,000 or 100,000 tons of pig-iron annually imported, about three-fifths are manufactured in the iron-mills of Cleveland, the remainder being shipped to other manufacturing points. In the petroleum trade over \$3,000,000 are invested, with an annual receipt of over three-quarters of a million barrels of crude, and a million barrels of refined oil. In the lumber trade at least a million dollars are invested, with an import of 150,000,000 feet of lumber, 130,000,000 shingles, 75,000,000 lath, and 20,000,000 staves. Toledo, at the mouth of Maumee, with over 30,000 inhabitants, being an increase of 120 per cent. in ten years, has a grain trade of over \$20,000,000 per annum.

Columbus, the capital of the State, is one of the prominent railroad centers of the West, and has an immense manufacturing and commercial interest. Dayton, on the Miami River, 60 miles north of Cincinnati, is a beautiful city, with a large trade and manufacture. Steubenville, on the Ohio River, Zanesville, on the Muskingum, Springfield, Chillicothe, Xenia, and other points might be named as thriving business centers, giving promise of future prosperity, and offering special inducements for the investment of capital.

The State of Ohio, with a population of nearly 3,000,000, exhibits an estimated daily production of values of \$4,500,000, or \$1,350,000,000 per annum, including raw material, and the subsequent changes wrought upon it by mechanical and chemical processes.

In none of the communities of the Union is there promise of higher development of civilization. Large portions of this State are as yet thinly settled, and very great inducements are still offered for immigration.

INDIANA.

Indiana, originally constituting a part of the "Northwestern Territory," and forming a portion of the Great Mississippi Valley, is the smallest of the Western States. It has an average length of 240 miles, breadth of not more than 140 miles, and an area of 33,809 square miles, or 21,637,760 acres, 20,000,000 of which are capable of cultivation. The total surface of improved lands in 1869 amounted to 10,500,000 acres,

an increase of over 2,000,000 acres since 1850. The population of the State in 1860 was 1,350,428. It is estimated that the ninth census will show an increase of at least 28 per cent., which would make the present population 1,736,261.

Indiana is bounded on the west by Illinois and the Wabash River; on the south by Kentucky, from which it is separated by the Ohio River; on the east by Ohio, and on the north by Michigan and Lake Michigan.

The surface of Indiana is mostly level and gently undulating, forming continuous slopes of great extent, which gradually sink toward the Mississippi. The most prominent elevation of land occurs along the southern end of Lake Michigan, which is about 1,000 feet above the sea level. The difference of elevation between the highest land in the State and the Ohio River is not over 600 feet, so that the average fall per mile from its northern extremity to its southern border would not be over two and a half feet. In the northern and northwestern portions of the State the lands are chiefly prairie, interspersed with groves of excellent timber. The table lands extending north of the White River bear heavy growths of various timber, such as walnut, beech, maple, oak, and ash; large prairies, some of them barren and marsh lands, present entirely different features from the more southern and southwestern portions of the State, which are very broken, rugged, and sometimes inconveniently hilly. A few miles from the Ohio there is a range of hills, running nearly parallel with it, which is noted for its commanding views and imposing scenery.

The soil of Indiana is generally of a highly fertile character. The valleys of the Ohio and the Wabash, as well as most of the other rivers, have rich alluvial bottoms, the most productive lands in the State, which yield from 100 to 125 bushels of corn per acre. Though the elevated lands are not so luxuriantly fertile as the river bottoms, yet the drift formation in the northern and central portions of the State, consisting of deposits of clay, sand, gravel, and boulders, and overlying the coal and limestone formation to a depth varying from ten to two hundred feet, supplies the soil with all the elements necessary to a high degree of fertility and durability. The soil of this State, being thus made up of a great variety of material, is exceedingly well adapted to the growth of the heaviest cereals as well as the most delicate fibers. Besides the corn crops, the bottom lands produce also good crops of wheat, which formerly, on account of the great amount of vegetable matter the soil then contained, would have been an impossibility. In the southern part of the State the vine flourishes excellently. Wine was first successfully manufactured in the United States at Vevay, on the Ohio, by a Swiss colony. Corn, wheat, and oats are the three staple products. The following are the aggregates of the principal crops raised for the year 1868: Corn, 90,832,000 bushels; wheat, 17,366,000; buckwheat, 370,000; oats, 11,285,000; potatoes, 3,100,000; tobacco, 7,237,000 pounds; hay, 1,280,000 tons. The average yield per acre of the above crops for 1868 was as follows: Corn, 34 bushels; wheat, 11.2; buckwheat, 19.3; oats, 26.5; potatoes, 88; tobacco, 705 pounds; hay, 1.35 ton.

The climate of Indiana possesses the general characteristics of the other Western States; the winters are somewhat severe, but healthy and invigorating, while the summers are comparatively mild, pleasant, and refreshing. There is considerable diversity of climate between the northern and southern portions of the State, which, lying between the thirty-eighth and forty-second parallels, furnishes a great variety of temperatures. In the southern portion cotton may be cultivated, and wheat harvested in the month of June; on the other hand, the northern por-

tion and the country of higher elevation are snow-covered frequently for three months of the year.

The Wabash, the principal river flowing into the Ohio, having a length of 600 miles, 400 of which are navigable, drains, with its tributaries, more than three-fourths of the surface of the State. The White, Tippecanoe, Eel, Mississinewa Rivers, the most important tributaries of the Wabash, originating in the interior of the State, at an elevation of about 500 feet, have a rapid descent, which is distributed along the course of the streams, thus affording an immense amount of water-power, which can readily be made available for the propulsion of machinery for manufacturing or other purposes. The other principal rivers in the State are the Maumee, Kankakee, St. Joseph, and Whitewater. Most of the principal rivers of Indiana fall into the Ohio, which borders the State on the south from the Miami to the Wabash, a distance, by the river's course, of 380 miles.

The coal district of Indiana, lying west of a line running northwardly from the northeast corner of Perry County to Burton County, embraces an area of about 7,000 square miles, or more than one-fifth part of the whole surface. The coals of Indiana are all bituminous, are divided into "dry" and "fat" coal, in consequence of the difference in the quantity of bitumen they contain. The "dry" coal, generally known as the Brazil or block coal, retains its hardness when heated, and, possessing sufficient bitumen in the form of an inflammable gaseous matter, burns until the whole is consumed. This property renders it highly valuable for smelting iron ores. It is generally found in the lower seams of the coal beds, which have a thickness of from three to five feet. On White River the seams are upward of six feet thick, and in some other localities seams of eight feet in thickness have been found. The fat bituminous coking coals swell and run together, and therefore cannot be used for smelting iron ore, but are nevertheless very valuable for steam purposes. This coal is found in great abundance within the limits of the coal district, the seams varying from one to eight feet in thickness. Geological surveys have been made in the counties of Clay, Green, Park, Fountain, Warren, Owen, Vermillion, and Franklin. These counties are very rich in their coal deposits, and accompanying the coal measures valuable deposits of iron are found. Clay County has five furnaces manufacturing bar and other rolled iron. These furnaces have their own collieries, giving employment to a great number of men engaged in mining block coal. The most valuable and extensive iron ore is found associated with the lower coal measures, and in some localities, where the seam of the coal measures thins, the iron exists in large masses from ten to twenty feet in depth, capable of furnishing a supply of ore for a large number of blast furnaces. The only thing required to insure success in this branch of industry is suitable transportation. In consequence of this want of transportation, 90 per cent. of the iron ore used by the furnaces is brought from without the State, mostly from Lake Superior and Missouri, leaving the extensive beds of iron ore but little worked.

East of the second principal meridian exists the limestone formation, which furnishes building material in the shape of clay and building stone of a variety of colors, and of great durability. On the Wabash, Flatrock, Sand Creek, Muscatuck, the blue limestone of the upper silurian is found from three inches to three feet in thickness, and is admirably suited for building purposes. Other varieties of lime and sandstone occur in different portions of the State, all of which furnish the

best of building material. Large shipments are made of this building stone to St. Louis, Cincinnati, Louisville, &c.

In manufacturing facilities Indiana possesses more than ordinary advantages. The central position of the State, with her great mineral wealth of coal, her many natural means for communication, added to her internal improvements, her abundance of water-power, and the fact that iron of the best quality can be produced with block coal at a less cost than it can be made in any other part of the United States, are considerations which must bring about a rapid development of her manufacturing industry. The cotton fields of the South and the wool-growing prairies of the West, situated in close proximity to this State, will soon give it unsurpassed facilities for the manufacture of cotton and woolen fabrics.

The railroad system has been rapidly progressing; there are over 2,700 miles of railroad completed, costing more than \$124,000,000, and affording the most excellent facilities for a profitable traffic. In addition to this, there are about 200 miles of railroad under construction, and about 1,000 miles have been projected. Indiana has also included within her limits 453 miles of canals, viz, the Wabash and Erie Canal, connecting Evansville with Toledo, 379 miles in length, and the Whitewater Canal, 74 miles long, connecting Cambridge with Lawrenceburg, on the Ohio. Its commercial facilities are of the first order. The Ohio, connecting the State with the Mississippi, enables it to carry on an active trade with New Orleans and the various places on the Mississippi. Lake Michigan gives it a direct navigation with New York. The exports consist chiefly of cattle, hogs, and other live stock, pork, beef, lard, corn, wheat, wool, and iron. The total valuation of real and personal property for the year 1869 is estimated at \$937,201,283, currency value; cash value of farms, \$535,068,262; annual productions, \$164,869,460. In the number of live stock raised, the State is one of the first in the Union. The total number of live stock for 1868 was 5,732,746, representing a value of \$64,147,227.

The common school system of the State has greatly improved in the last few years, and has been steadily growing both in popularity and power. In consequence of the increase of the school fund, and a wise distribution of the income, much has been done to advance the general standard of knowledge.

Indianapolis, the capital of the State, situated near its geographical center, has a population of over 50,000. It is quite a prominent railroad center, no less than seven railroads connecting it with the principal points in the United States. New Albany, Evansville, Jeffersonville, Madison, Lawrenceburg, the most prominent commercial cities on the Ohio, have populations varying from ten to twenty thousand. Terre Haute, Richmond, Cambridge, Columbus, Covington, Fort Wayne, La Fayette, some of the principal interior towns, are nearly all situated on lines of railroads and have a large trade with the surrounding country. The public land is mostly appropriated, and there remain but few tracts undisposed of. The only land office within the State for the entry of public lands is located at Indianapolis.

ILLINOIS.

One of the most populous as well as one of the most important agricultural and commercial States of the Union, embraces within its boundaries 55,410 square miles, or 55,462,400 acres. The decennial census of 1870 exhibits a population in this State of 2,567,032, which is

only exceeded by that of New York, Pennsylvania, and Ohio, being an increase of 855,081, or 50 per cent. during the last decade. The State contains more arable land than all New England, and has a greater surface than Denmark, Switzerland, and Belgium combined.

No portion of the surface of Illinois attains a high altitude, the mean elevation being about 500 feet above the sea. The term applied to Illinois, the "Prairie State," indicates the general expression of the scenery and character of the soil.

The face of the country is for the most part gently undulating, with but slight depressions, and no sharply defined drains except in the immediate vicinity of the main water-courses. Owing to the structure of the subsoil, comparatively little of the rain-fall is absorbed. Below the 18 or 24 inches of sandy loam and vegetable mould, which is remarkably tractable, constituting the soil proper, lies an almost impervious clay. This clay, when exposed, yields readily to the action of frost, and is rapidly worn away by running water, even with a very gentle fall. A thorough system of surface drainage is thus established, enhancing the value of the lands for agricultural purposes. There are numerous lakes and rivers within the boundaries of the State, some of which are bordered with fertile fields of beautiful grasses and flowers and attractive habitations forming exceedingly enchanting landscapes.

The work of development of the resources of Illinois has progressed with almost unparalleled rapidity. In 1839 the aggregate assessed valuation of real and personal property amounted to \$58,889,525; in 1859, to \$366,702,043; and in 1869 had increased to \$489,004,775. There was under cultivation in the State in 1859, an area of 7,364,626 acres, and in 1868, 9,407,488 acres. In the Western and Northwestern States a large increase of population is shown, but Illinois outstrips any of the others. The census returns show that Chicago, Washington, and Cleveland are the only three cities that have doubled their population during the last decade. Chicago has a population of 297,000, being 43,000 greater than Boston; while in the year 1860 Boston had a population of 177,000, and Chicago numbered but 109,000, the former then containing 68,000 more inhabitants than the latter city.

By the following figures, received from reliable sources, is exhibited what the farmers of the great Northwest are producing from the soil :

Products received at Chicago during the year 1869.

	Pounds.
13,540,250 bushels of wheat.....	812,415,000
25,396,523 bushels of corn.....	1,422,205,288
14,449,489 bushels of oats.....	462,383,648
1,367,461 bushels of rye.....	76,577,816
1,511,219 bushels of barley.....	72,538,512
Wool.....	11,919,219
2,092,553 barrels of flour.....	418,510,600
	<hr/>
	3,276,550,083
	<hr/>
324,524 cattle, estimated average weight, 1,075 pounds	348,863,300
1,786,675 hogs, actual weight.....	398,711,894
270,875 sheep, estimated average weight, 75 pounds..	20,315,625
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	767,890,819
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Total value of cereals, flour and wool.....	\$73,840,920
Total value of live stock.....	55,826,686
Aggregate value.....	129,667,606

The above figures only exhibit the amount and value of agricultural industries received at the Chicago market alone, for one year.

Chicago is one of the great live-stock markets of the West. The Union Stock Yard Company alone has 345 acres covered with pens, with a capacity for the accommodation of 25,000 head of cattle, 100,000 hogs, and 50,000 sheep. The yards and buildings are constructed on the most approved plan. Perfect sanitary regulations exist, there being a total underdrainage of 35 miles. There are 2,000 stock pens for cattle, and 1,000 covered pens for hogs and sheep, with 10 miles of streets and alleys. The yards connect by special tracks with all railroads centering in Chicago, offering the readiest accommodation for the receiving and shipment of stock.

Wool-growing forms an important branch of industry in Illinois. Some breeds of sheep, like the Southdown, thrive best on dry uplands, producing abundant and nutritious, but not rank, vegetation. Others, like the Lincolns and Leicesters, prefer moist, rich, alluvial valleys, where the grasses are abundant rather than delicate. The Merino requires dryness of soil and will succeed on scantier feed better than any of the others. All of these varieties of soil may be found in large tracts in Illinois, and consequently it is well adapted to the prosecution of wool-growing. There were shipped from Chicago in 1868, 10,906,202 pounds of wool.

There are 410 vessels of all classes owned in Chicago, with a carrying capacity of 73,637 tons, sufficient to supply the demands for transportation of an increasing production in the State.

Among the important events which occurred during the early settlement of Illinois, even as early as 1812, when Illinois was yet a Territory, was the introduction of steamboats upon the Mississippi and its branches, which established a new era in navigation throughout the Western Territories. The ordinary passage of a flat-bottomed or keel boat from Pittsburg to New Orleans was 75 days. By the introduction of steamers at that early day the same passage was made in 10 days. The displacement of the old flat-bottomed boats was followed by the construction of several hundred steamboats to be placed on Lake Michigan, the Upper Mississippi, the Missouri, and Illinois Rivers, and the flat-bottomed boat, as a mode of navigation, was enumerated among the things of the past.

The introduction of railroads has effected a wonderful change in the prosperity and wealth of Illinois, as well as the other Western States, and all along the lines of the thousands of miles of railway there have sprung up thriving cities and villages, as if by magic. Farms have been cultivated, and prosperity and thrift have succeeded to the comparative wilderness of former years. The demands of an increasing and industrious population have brought into requisition over 3,500 miles of completed railroads in this State, second only to that of Pennsylvania, with more in process of construction.

The lumber business of the State is assuming gigantic proportions, keeping pace with the rapid development of other industries of the Northwest. The receipts at Chicago for 1868 were, of lumber, 882,661,070 feet; shingles, 447,039,275; lath, 146,846,280.

Illinois, like Ohio and Indiana, has nearly ceased to contain public

lands, the title to the domain having almost entirely passed from the Government to individuals, and now but a few scattered parcels remain undisposed of.

It is estimated that the annual amount of manufactures in the great commercial center, Chicago, aggregates over \$40,000,000, embracing articles of great variety and such as find a ready market at home. In the manufacture of agricultural implements Chicago holds a prominent position, and during a recent period large establishments for the working of iron and other metals have been put into operation. There have not yet, however, been any factories established for the production of woolen fabrics.

The immense amount of business transacted at the banks in this metropolis is exhibited by the reports of the clearing house for the year 1869, which show a total amount of clearings of \$731,444,111, a very large increase over the preceding year.

Mills for converting wheat into flour and corn into meal undoubtedly constitute the largest manufacturing interest in the State, giving employment directly and indirectly to thousands of persons, as millwrights, millers, engineers, laborers, and bag and barrel makers. Outside of the immense establishments connected with agriculture the general manufacturing interests of the State are rapidly increasing and in most instances are in a flourishing condition. In 1867, seventy-one manufacturing companies of various descriptions were incorporated by the Illinois legislature. The immense coal fields of the State, accessible to navigable rivers and to the lines of railroad, will furnish the motive power of an extensive manufacturing system.

The marvelous growth of population in Illinois has been exceeded only by the advance of the State in agricultural development and manufacturing industry; from her geographical position in the American Continent she must become the center of a commerce the extent and value of which are beyond estimation.

MICHIGAN

is one of the five States formed out of the magnificent country northwest of the Ohio River, which was territorially organized by the celebrated ordinance of 1787. Its organization as a separate political division was accomplished by the act of Congress approved January 11, 1805, and it was admitted to the Union as a State by statute of June 15, 1836. Lying in latitude $41^{\circ} 40' - 48^{\circ} 20'$ north, and longitude $82^{\circ} 25' - 90^{\circ} 34'$ west, the boundary on the north is Lake Superior and St. Mary's River; on the east are Lake Huron, the river and Lake St. Clair, Detroit River, and Lake Erie; on the south, the States of Ohio and Indiana; and west, Lake Michigan and Wisconsin. The area of Michigan is 56,451 square miles, or 36,128,640 acres, divided into sixty-three counties. The capital is Lansing; the chief towns, Detroit, Ann Arbor, Grand Rapids, Adrian, East Saginaw, Jackson, Kalamazoo, Marshall, Port Huron, Monroe, and Ypsilanti.

The State is divided by Lakes Michigan and Huron into two irregular peninsulas. The upper, a region of mountains and forests, covering about one-third of the State, lies between the northern portions of Lakes Michigan, Huron, and Superior, while the lower peninsula is nearly inclosed in a vast horseshoe bend of Lakes Michigan, Huron, Erie, and the connecting straits and rivers.

In the upper peninsula are the Porcupine Mountains, rising to a height of 2,000 feet, with plains and forests. The lower is a level,

rich, fertile country of prairies and oak openings, watered by numerous rivers, the largest of which are the Grand, Kalamazoo, Muskegon, and Saginaw.

The adaptability of the soil and climate of Michigan to agricultural pursuits is complete, the former being rich and inexhaustible, the latter much milder than the country occupying the same latitude on the Atlantic coast, no doubt owing to the proximity of such vast bodies of fresh water. Visitors or emigrants coming from the severe climate of New England, or from the enervating latitudes of the extreme south, find themselves suddenly in possession of fresh muscular forces, and welcome the invigorating atmosphere.

The population of the State in 1851 numbered 397,654; in 1860, 751,110; in 1864, 803,745; and at this time will reach nearly 1,200,000, an increase of 60 per cent. in ten years.

The agricultural and other material prosperity of Michigan has kept pace with the rapid increase of population, and the advances made in the way of popular education are truly wonderful.

The common schools are fostered by the State, and the system is on the most progressive plan, having won the encomiums of those best acquainted with the different systems, not only in this country but in Europe; while the seminaries and colleges rival those of the older States where such institutions have long been established. During 1868, the number of children attending the public schools amounted to 249,920; the number of teachers, 9,608; while the sum expended in the advancement of educational interests was \$2,449,356 77.

Among the schools of a higher class may be mentioned the University of Michigan, at Ann Arbor, having twenty-eight professors and more than 1,000 students; the State Normal School at Ypsilanti, and the State Agricultural College at Lansing, all holding high rank among the institutions of learning.

In the list of agricultural productions which Michigan possesses, none are omitted which can be raised in the Middle or Eastern States, while the grape and peach on the lake shores arrive at a great degree of perfection.

While we have not at hand accurate estimates of the quantities of different crops raised, value of live stock, and dairy and orchard products during the past year, it is not to be doubted that the results of the next census, when compared with that of 1860, will show an unprecedented increase in these respects.

The State has made gigantic strides in the progress of railway construction, the number of miles in operation in 1851 being only 357, and on the 1st of January, 1870, 1,325. The demands for these requisites of modern travel and transportation are increasing, the process of extending this network of intercommunication being at present more vigorous and active than ever. The next decade will unquestionably witness an extension of these lines of travel far surpassing anything heretofore existing.

The mineral deposits are on an immense scale, especially those of copper and iron, the former being found in the upper peninsula in several varieties, mostly in the primitive formations. These copper deposits are undoubtedly the richest in the world, occupying a belt one hundred and twenty miles long and from two to six miles wide. The quantities produced annually since 1865 range from 8,500 to 15,000 tons, and during the twenty years prior to 1865 aggregated 76,107 tons. The development of the copper mines has been rapidly accelerated since the

close of the war for the suppression of the rebellion, progress in that respect having been temporarily interrupted during that period.

The deposits of iron in Marquette County, on the upper peninsula, are rich in the extreme, yielding in steadily increasing quantities year by year. This mineral exists in other portions of the State, but as yet capital has only been directed toward developing the stores of wealth in the region referred to.

The coal field of Michigan is estimated by geologists to cover an extent of 7,000 square miles, and the mining of bituminous coal is prosecuted successfully, the annual yield being steadily on the increase.

The manufacture of salt is destined to become one of the leading interests of the State, large quantities being now annually produced. In 1869 the product was 577,569 barrels. The amount of capital invested in its manufacture is reported at \$2,432,500, representing 57 different companies. The saline regions are principally within Saginaw, Bay, and Kent Counties, East Saginaw being the most important.

The forest wealth of the State will compare favorably with any other of the Union, and the lumber trade has expanded into prodigious dimensions in a manner overshadowing every other industry.

The number of feet shipped in 1867, principally to Chicago and Milwaukee, was 1,400,000,000; in the past year, 2,100,000,000 feet.

Manufacturing interests are considerable and advancing with great celerity to a position commensurate with the vast resources of the State.

Fish of various kinds abound in the lakes, and the wealth derived from the trade is enhancing every year. The agricultural and mineral resources, so briefly noticed here, assisted by the remarkable commercial position of the State, with its 1,400 miles of lake navigation and water communication with the Atlantic Ocean, through that long alternation of river and lake, the reservoir of half the fresh water on the globe, far eclipsing in the heart of a continent the peculiar boast of ancient Corinth as the mart of two seas, are destined, at no distant day, to raise the State to the front rank in manufactures, population, wealth, and general material prosperity.

The area of public lands undisposed of in Michigan, on June 30, 1870, was 3,660,530.31 acres.

WISCONSIN.

This State, between latitudes $42^{\circ} 31'$ and 47° north, and longitude $87^{\circ} 20'$ and $92^{\circ} 30'$ west of Greenwich, contains 53,924 square miles, or 34,511,360 acres.

It was originally embraced in the territory ceded to the United States by Virginia, and has successively formed parts of the Territories of Indiana, Illinois, and Michigan before those commonwealths were admitted as States.

It became a member of the Union on the 3d of March, 1847, being the thirtieth of our political divisions.

Its northern boundary is formed by Northern Michigan and the waters of Lake Superior; its eastern by Lake Michigan, separating it from the Michigan southern peninsula; its southern by Illinois and its western by Iowa and Minnesota, from which it is divided by the Mississippi River.

The greatest length of the State is 302 miles; breadth, 258 miles, though on its southern boundary it measures only 146 miles.

The surface of Wisconsin is uniformly elevated, the land mostly level and of undulating characteristics, the whole expanse of country, with

few exceptions, being a vast plain, varied occasionally by low ranges of bluffs, ridges, and cliffs, bordering the rivers and lakes.

The State, however, has a southern inclination, the waters finding their way to the Mississippi River. Yet, in the northwestern part, in an extent of country 50 by 80 miles, the land inclines to Lake Superior and the rivers of that region flow north, giving their waters to that lake. The only elevations in the State assuming the proportions of mountains are in this region, and obtain a height of from 1,800 to 2,000 feet, of which the most important is the Iron Range, in Ashland County.

On the peninsula jutting out between Green Bay and Lake Michigan is a range of calcareous cliffs, forming, in many places, bold escarpments, some of the higher points of the range being 1,400 feet above the sea.

South of the forty-fifth degree of north latitude the lands are well adapted to a great variety of crops, notwithstanding occasional backwardness of the spring, as vegetation generally comes forward on the approach of summer with great rapidity, causing the crops to ripen in due season. The soil is very fertile, gradually changing, however, from the vegetable mould of the prairie in the southern and southeastern portions to a sandy loam north of the Fox and Wisconsin Rivers and Green Bay, where the timber begins to increase.

In the settled portions of the State agriculture is the chief source of wealth, and must continue to be the principal object of industry with the people, who, being, in part, immigrants from foreign countries, especially from the great Germanic confederation and the Scandinavian Peninsula, have been educated in the tillage of the soil. The extent of this industry is shown by the fact that four millions of acres of land are now under cultivation, this vast area having been thus redeemed, in comparatively a brief period, from its wild condition.

The principal crops are wheat, oats, Indian corn, potatoes, rye, barley, buckwheat, tobacco, hay, and hops. The fruits are raised in as great variety as in the East, while its reputation as a great grain-growing State is well established. The total value of all the crops for the past year amounted to \$73,200,000, while the number of live stock is computed at 2,550,000, representing an aggregate value of \$31,092,000. Personal property is valued at \$83,000,000, and the real estate at \$254,870,000, making a grand total of \$442,172,000.

Wisconsin has a very genial climate, and though its summers are of short duration, the dryness of the atmosphere during winter renders it one of the most healthy portions of the United States. The winter temperature is 20°, spring and autumn, 47°, summer, 72°; the mean annual temperature of the southern part being 46°. The isothermal line of 50° runs near the southern extreme of Lake Michigan, while that of 40° is near the north shore of Lake Superior, thus bringing the whole State within the intermediate ten degrees. The waters of Lake Michigan moderate the excessive heat and cold of the eastern shore of Wisconsin by absorbing the heat of summer and exhaling the same during winter.

In consequence of the snow always falling in the northern part of the State before the ground is frozen, roots and plants are comparatively sheltered from the severe frosts of winter and their growth hastened in the spring. In the southern part some winters pass almost entirely without snow, though generally it lies on the ground to the depth of from twelve to eighteen inches during the greater portion of winter. The country is plentifully supplied with rain, the average fall being 30 inches, though northward, on the shore of Lake Michigan and on the

banks of the Mississippi, the quantity of rain is much less than in the central portion.

A great source of wealth for the future of Wisconsin is its timber, for while the southern part of the State is an extensive prairie, without native tree or shrub, except on the banks of the streams, yet in the northern and western the forests are of immense dimensions. Over sixty kinds of native trees have been found, the more common of which are the basswood, maple, wild cherry, elm, ash, hickory, black walnut, butternut, oak, birch, poplar, hemlock, cedar, and pine.

The most extensive and valuable of this timber is the pine, which has become an immense source of wealth, and must continue so to be for a century to come.

The multitude of streams draining these extensive forests affords excellent facilities for ready flow of rafts on the opening of spring navigation, and carry the timber, at little cost of transportation, to the many hundred mills scattered along their banks.

Thousands of men and teams are already employed in the lumber business, and hundreds of millions of feet of timber are annually carried to a market; yet so rapidly is this industry increasing that the demand for labor is far in excess of the supply.

The principal outlets from these extensive pineries are the Chippewa, Wisconsin, and St. Croix Rivers, and their tributaries, to the south, and the Bois, Brulle, Bad, and Montreal Rivers to the north. The former carry their freight to the Mississippi, while the latter open the way to Lake Superior.

The water privileges are extensive; almost the whole surface is traversed by numerous rivers and streams. The principal rivers have a drainage surface of 51,815 square miles, permeating the most fertile portions of the State, affording extensive facilities for navigation and manufacturing purposes, the rapids with which many of the streams abound giving ample opportunity for water-power.

The Fox River, in its descent from Lake Winnebago to Green Bay, a distance of 38 miles, has a fall of 170 feet, forming one of the most valuable water-powers in the West, which is already greatly improved at Menasha, Appleton, and De Pere. This river, 225 miles in length, navigable almost to its source, has been improved by the construction of locks and dams between Lake Winnebago and Green Bay, and is likewise connected by a canal and lock with the Wisconsin at Portage City, thus effecting an uninterrupted water communication from Lake Michigan and Green Bay through to the Mississippi, and from thence to the Atlantic.

The largest river is the Wisconsin, which, taking its waters from Vieux Desert Lake on the northern boundary, traverses the State in a southern direction, dividing it into two parts, mingling its waters with the Mississippi at Prairie Du Chien, after a course of 370 miles, with a descent of two-thirds of a foot per mile. Eleven thousand square miles of country are drained by this river, it passing through some of the richest pine lands of the State. Next in importance to the Fox and Wisconsin are the St. Croix and Chippewa, the former taking its source within 25 miles of Lake Superior, forming a part of the western boundary of the State, and also furnishing an outlet to the Mississippi for the lumber of the region in which it heads.

The Chippewa, with its six branches all heading in the midst of timber, drains the country midway between the Wisconsin and St. Croix Rivers, giving its waters to the Mississippi. Thus the utilization of this immense wood region is made comparatively easy, for all these waters

flow to the Mississippi, opening an easy and never-failing outlet to the Atlantic and the markets of Europe.

The most fully developed of this great timber region is that bordering on the eastern line of the State and in Oconto and Shawanaw Counties, the lumber being shipped through the Menomonee, Peshtego, Oconto, and Pensaukee Rivers to Green Bay and Lake Michigan, and to Chicago, the lumber market of the West.

Portions of Wisconsin abound in the minerals of general utility, such as lead, iron, and copper, as also in various kinds of stone.

The lead mines of the State, situated in the counties of Grant, Iowa, Lafayette, and Green, in the southern part, have been worked for over thirty years, and continue to be a source of profit to the owners. They give employment to over 3,000 men and yield one-eighth of all the lead produced in the world, the annual production being over half a million of dollars.

Iron-ore deposits are extensive, and furnaces have already been erected in Sauk, Jackson, and Dodge Counties. The iron ridge of Dodge County is of considerable magnitude and the ore of excellent quality. This ridge attains a height of 50 feet, and is nearly 30 miles in length, and the whole of it is supposed to contain ore.

Extensive beds of iron ore and mines of copper occur in the region of Lake Superior, but, owing to the heavy forest and sparse settlement, it has not been thought profitable fully to develop them. In the course of time, as better means of intercommunication are established and the country becomes cleared, these mines will add another source of wealth to the interests of the State.

The most remarkable of the iron beds is the Penokee Iron Range, in Ashland County, which is destined to become one of the best, as it is one of the most extensive, in the United States, being advantageously situated 18 miles from La Pointe, on Lake Superior, which possesses one of the finest harbors upon the shores of that lake. This portion is the least improved, settled, and developed, but it contains rich mines, extensive pineries, unrivaled water-power, and, with its elevated surface traversed by numerous streams, affords so many natural advantages that the capitalist and others cannot but realize wealth and substantial prosperity.

Kaolin is found at Grand Rapids, on the Wisconsin River, and is used in the manufacture of fine pottery.

The limestone underlying the coal fields of Illinois forms the immediate basis of the alluvion of Southern Wisconsin; hence we do not find coal.

The Niagara group of limestone, of the upper silurian formation, is found underlying the surface from the entrance of Green Bay south along the shore of Lake Michigan to Illinois, affording excellent material for building and for the manufacture of quicklime.

The rocks of the State are covered with the remains of the glacial or drift period, except that portion comprising the lead region and the counties bordering upon the Mississippi. To this deposit of the glacial period is due the uniform character of the soil over the larger portion of the State.

Zinc and copper are found in the lead region. The zinc is made from the black-jack and dry-bone ores formerly considered useless. Clay, for the manufacture of the very best of brick, as well as for the coarser kinds of pottery, is abundant in different places, and the bricks of Milwaukee, made of a straw-colored clay of a very durable character, are second to none. Gypsum has been found on Sturgeon Bay. Peat and marl exist in

vast beds under the marshes, both valuable as fertilizers, and the former also as an article of fuel.

The manufacturing industry of Wisconsin is in a flourishing condition and steadily increasing. It is estimated that this interest has in operation 5,000 establishments, with an invested capital of \$30,000,000, producing articles to the value of \$50,000,000.

The social, political, and pecuniary advantages of education have been fully appreciated by the people, and intelligence has kept pace with the otherwise rapid growth and progress of Wisconsin. School facilities are ample, each settlement having a school-house in close proximity. The productive capital of the educational funds in 1868 was \$3,055,700, from which an annual income of \$233,227 was realized, while the number of colleges, normal schools, and female institutes afford ample opportunity to every one for acquiring a collegiate education.

Wisconsin, being almost surrounded by navigable waters, possesses excellent commercial facilities for the transportation of surplus productions, which may easily and cheaply be sent from the northern and eastern portions over the lakes to the East, and from the western part by the Mississippi to the South and the ocean.

The railroads, in conjunction with its water communications, rendering the market easily accessible, must rapidly develop natural resources and increase the wealth and industry of the country.

The railroads in operation on the 1st January, 1870, were equal to 1,158 miles, being an increase of over 300 miles within the last ten years. The Chicago and Northwestern, one of the most important in the State, is connected with steamboats navigating Green Bay and Lake Michigan. The Milwaukee and St. Paul Railroad, to Prairie du Chien and La Crosse, traverses the State between Lake Michigan and the Mississippi, while the Tomah and St. Croix, from Tomah, in Monroe County, to Hudson, on the St. Croix, which is being rapidly constructed, will give communication and transportation to the more central portions of the State. This route is also connected with Portage City by a road built by the Wisconsin Railroad Farm Mortgage Land Company, with the assistance of the congressional land grant of 3d June, 1856. Congress has also made a grant of land for a road from Portage, by the way of Berlin, to Bayfield, and thence to Superior, on Lake Superior; the route of this road traverses the center of Wisconsin north and south, and, when completed, will open up a large part of the immense lumber region of the State.

The Northern Pacific Railroad, now in course of construction to the Pacific, in Washington Territory, has its eastern terminus on the shore of Lake Superior, traversing the most northern part of the State, through the copper, iron, and pine regions of that locality.

The principal cities and towns of Wisconsin are Milwaukee, Madison, Green Bay, Prairie du Chien, La Crosse, Falls St. Croix, Hudson, Bayfield, Menasha, Stevens Point, and Superior.

Milwaukee is the chief commercial port, being situated in the south eastern part of the State, on the shore of Lake Michigan. It contains a population of over 100,000, and has one of the finest locations in the world. Amphitheatrical in form, the city rises from the shore of the lake in a semicircle, its white mass of houses from the distance appearing like rows of palaces. It is the leading manufacturing city of the State, and for this its immense and improved water-powers give it peculiar and extraordinary facilities. Its manufactories are very numerous, consisting of founderies, furnaces, and rolling-mills, boot and shoe, furniture, barrel, and other factories.

The several railroads diverging from the city to the most important

points in the State and throughout the Northwest, the lines of steamers connecting it with the various ports of Lake Michigan and Chicago, its fine harbor and river, navigable for the largest boats, afford advantages which but few cities enjoy. Next to Chicago, it is the greatest wheat market in the world. A distinguishing feature of the city is the material from which the houses are built. It consists of the straw-colored brick peculiar to the country, and which imparts to the town a very novel and cheerful appearance.

Madison, the capital of the State, is situated on Mendota Lake, in Dane County, in the southern part, commanding a fine view of the surrounding country. The present population numbers over 13,000. It has extensive water-power, is connected by railroad with other portions of the State, and will soon have a complete connection with the main lines of Wisconsin.

Superior City, on Lake Superior, in the northwest, is possessed of a good harbor; and, being the proposed terminus of several of the lines of railroads leading from different parts, is destined to become a place of considerable importance.

Wisconsin has grown rapidly in population. In 1850 it contained 305,391 inhabitants, which had increased in 1860 to 775,881, while its present number is estimated at over 1,050,000, an increase of over 300 per cent. in twenty years.

There remain undisposed of 8,392,631 acres of public land, which have been surveyed by the government and put in market, and are now open to disposal for actual settlement or for capital investment, except a few townships still held as Indian reservations and a few of the even-numbered sections of public lands along the line of the land-grant railroads, which are at present offered only to actual settlement and at the double-minimum price.

POLITICAL DIVISIONS IN THE VALLEY OF THE MISSISSIPPI LYING WEST OF THE RIVER MISSISSIPPI,

MINNESOTA

is justly considered one of the most favored regions on the continent as a home for an agricultural and manufacturing population, possessing a climate of unrivalled salubrity, abounding in extensive tracts of rich arable lands, abundantly timbered throughout its whole extent, watered by innumerable lakes and streams, well supplied with arteries for communication by rivers in all directions, and subject to none of the drawbacks arising from excessive moisture or aridity which prevail in other quarters of our country.

With reference to the physical system of the continent this State occupies the exact center, being situated equi-distant from the Arctic and Tropic circles, the Atlantic and Pacific Oceans, and the Hudson Bay and Gulf of Mexico. It contains within its limits 83,531 square miles, or 53,459,840 acres, and has a greater absolute extent of surface available for agricultural purposes, in proportion to its whole area, than any State of the Union, about four-fifths of the domain being susceptible of profitable husbandry. The prevailing soil is a dark, calcareous, sandy loam, containing a various intermixture of clay, abounding in mineral salts and in organic ingredients derived from the accumulation of decomposed vegetable matter for long ages of growth and decay. The sand of which silica is the base forms a large proportion of this, as of all good soils. It acts an important part in the economy and growth of the cereals.

Three-fourths of the State is fine, rolling prairie, interspersed with frequent groves, oak openings, and belts of hard-wood timber, watered by numerous beautiful lakes and streams, and possessing warm, dark soil of great fertility, producing bounteously all the crops of the temperate zone.

The residue, embracing the elevated district immediately west of Lake Superior, consists for the most part of the rich mineral ranges on its shores and of the fine forests which clothe the headwaters of the Mississippi, affording almost inexhaustible supplies of lumber.

Of the total area of the State, 53,459,840 acres, 17,819,947 acres, or one-third, is estimated to be timbered land of more or less dense growth, and the remainder principally prairie. Of the whole surface, 26,019,739 acres have been surveyed, 19,516,340 acres have been disposed of, and 33,943,500.55 acres remain open subject to occupancy.

Among the natural features of Minnesota are the number, beauty, and picturesqueness of its lakes, which have been estimated, both large and small, as high as 10,000. They are found dotting its surface in nearly every section of the State, sparkling in the open prairies, hidden in the depths of the forests, and glistening like gems among the rugged hills of the northeastern section. These lakes not only give variety and beauty to the landscape, but supply the atmosphere during the summer months with moisture, and in many cases, by natural navigable streams successively passing from one to another, they constitute arteries for travel and transportation over a large portion of the country. The most delicious fish, such as bass, pike, pickerel, and sunfish, abound in all these lakes.

The navigable rivers of this State are the Mississippi, Minnesota, St. Croix, St. Louis, Root, and the Red River of the North.

The Mississippi courses about 800 miles through Minnesota, of which 540 miles are navigable within the State.

The Minnesota River, rising near Lac Traverse, flows southeasterly a distance of 450 miles and empties into the Mississippi at Fort Snelling, five miles above St. Paul. This is one of the finest streams in the valley of the Mississippi, and the country through which it passes cannot be excelled for salubrity of climate and productiveness of soil. In a good stage of water steamers can ascend almost to its source. The other rivers are navigable from 50 to 100 miles, penetrating into the interior to the pineries, and giving easy water communication into the country in all directions, as well as affording excellent water-power for lumbering, milling, and manufacturing purposes. Among other rivers not navigable are the Rum, Crow, Elk, Sauk, Crow-Wing, and Vermilion.

There is no elevation of land in Minnesota that approaches the dignity of a mountain, the nearest approach being the towering bluffs along the shores of the Mississippi; and from Dubuque to St. Paul, viewed from a distance, these ranges of bluffs have the irregular outline of mountains seen in other portions of the Union.

The State enjoys an enviable reputation for its healthy and invigorating climate. The atmosphere in summer is very clear, cool, and pleasant, with westerly, southwesterly, and southerly breezes. The nights are always cool and bracing. Large quantities of rain fall and heavy thunder-storms are frequent. The most remarkable characteristic of the winter is its extreme dryness, there being an almost total absence of rain or moisture. The mercury in winter, though almost always below freezing point, is seldom below zero.

The summer mean temperature is 70.6°, which corresponds with that

of Central Wisconsin and Southern Pennsylvania. The winter mean temperature is 16.1° , which coincides with Northern Wisconsin and Central Vermont. Mean annual temperature, 44.6° . With an average temperature of 16° , the dry atmosphere of winter in Minnesota is said to be less cold to the sense than the warmer, yet humid, climates several degrees further south.

No State in the Union exhibits more rapid progress in agricultural pursuits than Minnesota. In 1859 there were but 345,000 acres under cultivation, while in 1869 there were 1,690,000, showing an increase, for the decade, of 1,345,000 acres, or 390 per cent., an unprecedented development. The number of improved farms in 1864 was 23,787, and in 1869, a period of five years, there was 45,740, being an increase of 92 per cent.

In agricultural pursuits, wheat, the great staple, may be considered a specialty, surpassing all others in prominence. History abundantly affirms the fact that in the dominating nations of the world, from that nation of antiquity which prospered coeval with Egyptian wheat-fields to the present time, wheat has been the prime food, and no nation has long lagged in the race of civilization which assigned to this cereal a conspicuous place. The achievements of Minnesota in the growth of this staple assume a proud preëminence. In the average per acre, and in the magnitude of operations, she has no rival.

From 1859, in which year there were but 124,969 acres appropriated to the culture of wheat, yielding 2,374,415 bushels, occupying only 34 per cent. of her whole cultivated surface, there has been a constant absorption of area by this grain, so that its occupancy in 1868 was nearly 62 per cent. In that year there were 858,316 acres devoted to wheat, producing 15,381,022 bushels.

The average yield during the past eleven years, ending with 1869, has been 17 bushels per acre.

There appears to be an invaluable property in the soil and climate of the State which enables this grain to measurably resist the extremes of heat, cold, or moisture, and for the industrious and intelligent immigrant no other occupation presents so practicable a field as wheat-growing, and no more inviting region can be found for his operations than in the rich, gently-swelling, and tractable prairies of Minnesota.

While wheat is shown to be a specialty of the State, overshadowing all other crops in importance, it must not be inferred that the soil is not adapted to the production of the other leading cereals of the northern latitudes. Oats, corn, and barley thrive admirably, and the cultivation of these crops during the past year has been eminently successful. The oat crop of 1869 excelled any previous year, both in quantity and quality. The yield is estimated at 12,310,298 bushels, averaging, for the whole State, 43 bushels to the acre, and there are well-authenticated instances of averages reaching 60 to 75 bushels.

Although corn holds a subordinate place in agriculture in Minnesota, experience has shown that the capacity of the soil for the culture of this grain is equal to that of States situated in more southern latitudes. The crop of 1868 showed a total of 4,849,936 bushels, and an average of 37 bushels to the acre.

There has been but a comparatively small space assigned to the growth of barley. The total product of 1869 was 813,120 bushels, the average being 37 bushels to the acre.

Potatoes are unsurpassed in quality, and their yield is most prolific, averaging 120 bushels to the acre. Beans, beets, peas, and all kinds of

garden vegetables are grown in great abundance. Nearly all varieties of small fruits, native and cultivated, thrive well.

The peculiarities of soil, climate, and natural food are admirably adapted for the prosecution of wool-growing, which is destined to form an important interest of the State.

The total value of agricultural products for 1869 is estimated at \$23,000,000, and that of live stock at \$15,500,000. The assessed valuation of the aggregate real and personal property for the same year was \$78,124,793.

The development of manufacturing industry in Minnesota has equaled the astonishing progress made in agriculture. With the extensive and effective water-power at St. Anthony, Falls of St. Croix, and other localities within her limits, greater than the whole steam and hydraulic power employed in the textile manufactures of England, this State is destined to become one of the foremost in manufacturing pursuits of the Union. The most important articles of manufacture are lumber, flour, whiskey, and leather. The result of operations in this branch of industry for 1869 show a total value of \$14,831,043, with 1,650 establishments.

On the headwaters of the tributaries of the Mississippi and St. Croix Rivers are extensive pineries, where the annual cutting of logs and manufacture of lumber forms an important element of wealth of the State. The result of this business for the past year shows a total value of \$2,650,635.

The relative progress of the State in agriculture, population, and manufactures in nine years, from 1860 to 1869, inclusive, is thus shown:

	Per cent.
Increase in breadth of total tillage.....	290
Increase in population.....	173
Increase in value of manufactures.....	245

The minerals of Minnesota, located in the northeastern section of the State, are destined to be inferior only to agriculture as an element of wealth and prosperity. Copper abounds on the northern shore of Lake Superior, and large masses of the pure metal have been taken from that locality. Iron ore, in considerable quantity, found near Lake Pepin, has been tested, which proved to be fully equal in tenacity and malleability to the best Swedish or Russian iron. The iron ore found between the Blue Earth and Le Sueur Rivers is said to yield 31 per cent. of light gray iron. Coal has recently been discovered in the vicinity of New Ulm. Other minerals are found in the State, such as salt, lime, and white sand for glass, but the development of the mineral resources may be said to be meager in the extreme.

On the 1st of June, 1865, the State census exhibited a population of 250,099, and from the most reliable data attainable the population on the 1st of January of the present year was shown to be 470,000, an increase of 219,901 in a period of four years and seven months, or 87.92 per cent. It is estimated that of the present population 265,000 are of American ancestry and 205,000 foreign born. Of the foreigners the German element predominates.

Among the important towns of this State are: St. Paul, with a population of 20,000; Minneapolis, 15,000; Winona, 10,000; St. Anthony, 6,000; and Red Wing, Rochester, Faribault, Hastings, and Stillwater, with a population of from 3,000 to 4,000 each.

In 1862 there was not a mile of railroad completed in this State. The sole reliance for travel and transportation was river navigation for

seven months of the year, and the limited land carriage by stage the remaining five. While the business upon the navigable lakes and rivers has suffered no diminution, the demands of a rapidly increasing commerce have brought into requisition 750 miles of completed railway, employing a capital of \$23,500,000, transporting, in 1869, 677,684 tons of freight and carrying 478,973 passengers. The whole number of miles projected in the State is 1,550; 1,351 of which are either completed or being constructed.

There were 792 steamboat arrivals at St. Paul during the last year, carrying 450,000 tons of freight and 255,800 passengers, which only exhibits the navigating force on the Mississippi, Minnesota, and St. Croix Rivers; the Red River of the North and a considerable and rapidly increasing navigation on Lake Superior not being included.

The contemplated Northern Pacific Railroad belting the republic, of the early construction of which there is but little doubt, will have a most important bearing upon the commercial interests of Minnesota, and with the speedy completion, already assured, of the railroad to Lake Superior, thus affording facility for the transportation of her multiplying products to competitive markets, the commercial future of the State appears most promising.

The common schools of Minnesota have progressed in corresponding ratio with her material development. In 1869, and prior to that year, there were 1,929 school-houses, erected at an expense of \$1,339,690. Whole number of scholars in attendance, 102,086. A land endowment of two sections in each township has been set apart for the support of common schools by the Government. It is estimated that these lands will amount to 2,900,000 acres, the interest on the sales of which, together with an annual levy of \$2,000,000 tax, constitute the present common school fund of the State.

By legislative exactment, normal schools have been provided for and established at Winona, Mankato, and St. Cloud; and Congress has donated lands for the support of a State university, which is now in successful operation and growing in usefulness.

Minnesota has enacted a very liberal law for the protection of homesteads. The law provides that a homestead, not exceeding 80 acres, with the dwelling-house thereon, and its appurtenances, not included within the limits of any incorporated town, shall be exempt from liability for debt.

The local land offices in this State are situated at Taylor's Falls, St. Cloud, Jackson, New Ulm, Litchfield, Du Luth, and Alexandria. There are 33,943,500.55 acres of public land undisposed of in the State.

DAKOTA.

This Territory, in the northern tier of the political divisions of the United States, is bounded on the north by the British Possessions of North America; on the east by the States of Minnesota and Iowa; on the south by the State of Nebraska, and on the west by the Territories of Wyoming and Montana. It was organized as a Territory on the 2d of March, 1861, and, notwithstanding its original boundaries have since been much reduced, it yet extends from latitude $42^{\circ} 30'$ north to latitude 49° north, and from longitude $96^{\circ} 25'$ to 104° west from Greenwich, its greatest length being 414 miles, and its greatest width 360 miles, with an area of 50,932 square miles, or 96,595,840 acres.

The Missouri River courses through the entire Territory from northwest to southeast, and with its many tributaries, of which the Big Sioux,

Vermillion, Dakota, White Earth, Big Cheyenne, and Little Missouri are the most notable, affords an unfailing steamboat navigation of over 1,000 miles.

The margins of the rivers, lakes, and brooks are generally fringed with groves of cottonwood, oak, ash, elm, and maple. The smaller streams are principally fed by springs of good, pure water, while the larger rivers take their rise among the numerous fresh-water lakes of the interior plains, and among the foot-hills of the Rocky Mountains on the western border. The Red River of the North passes northward for a distance of 200 miles along the eastern boundary of the Territory, and is bordered by a continuous line of beautiful forests, and drains an immense district, consisting, generally, of open plains, which are covered abundantly with highly nutritious grasses, affording pasturage throughout a great part of the year. The curing of ample supply of food for the keeping of live stock during the severe winters of this high latitude would require but little labor or expense, while the feasibility of devoting these lands to the culture of the more hardy cereals and vegetables is not doubted.

The settlement of this portion of the Territory has been, perhaps, retarded by the aversion of those interested in fur-trading to an influx of population, which would be subversive of their occupation, in driving to more remote points the animals upon which that industry depends. But the time is not distant when this narrow interest must give way to that spirit of progress and civilization which is so rapidly turning the wilds of Western America into comfortable homesteads, pleasant hamlets, thriving towns, and great cities.

Dakota has as great a variety of surface and as rich a soil as almost any State or Territory of the United States. The country rises gradually westward, culminating at the extreme western portion of the Territory in the Black Hills. In the southeastern part is a plateau or range of highlands, called the Coteau des Prairies, having an elevation of 1,400 feet above the level of the sea, and extending for nearly 200 miles along the eastern border of the Territory. Somewhat similar table-land, though less elevated, extends through the middle and northern portions. The general surface of Dakota may be described as a smoothly undulating prairie; the soil, a rich, deep, sandy loam, principally an accumulation of decayed vegetable matter, rendering it warm and dry for seeding in the early spring time. The mildness and geniality of the climate of Southern Dakota is fully attested by the fact that myriads of wild flowers of the most varied and beautiful colors adorn the prairies from April to October. The annual rain-fall averages 20 inches, and the fact that this is mostly precipitated during the warm and growing seasons of the year, little moisture falling in winter, secures exemption from long-continued droughts. An idea of the productive capacity of the soil may be formed, when it is known that wheat yields from 25 to 45 bushels per acre; corn, 40 to 70; oats, 60 to 100; and potatoes, 200 to 300; while all kinds of vegetables usually grown in the Middle States yield abundantly. It is said by experienced farmers that the tobacco plant and sweet potato can be raised without difficulty on the warm, quick bottom lands of the southern part. Hops, grapes, currants, plums, wild cherries, and many varieties of berries grow spontaneously, and yield in amazing profusion along all the brooks and streams.

Dakota is not yet possessed of any railways, and consequently the population, numbering from 15,000 to 20,000, is confined principally to the borders and valleys of the navigable streams, comprising

about one-third of the area of the Territory. The Big Sioux River, a clear rapid stream of pure water, with firm shores and gravelly bottom, has numerous rapid places which afford many fine water-powers, some of which are now used, and others are being improved. Its valley and the country above it to Big Stone Lake is one of the finest bodies of agricultural land in the Territory, which, at no distant day, will be improved, and is wonderfully productive, experience showing that these lands yield better after the soil has been broken four or five years. The Brulé Creek Valley is smaller, and joins that of the Sioux near its mouth. It is a very beautiful and attractive region, being one of the most densely settled districts of the Territory. Next west of these is the Vermillion Valley, equal to any for natural beauty and fertility of soil for a distance of 30 miles from the mouth of the Vermillion River, and is likewise the center of rapidly increasing settlements. The Dakota Valley, larger but not much known beyond 75 or 100 miles from its mouth, contains large tracts of the best lands, presenting a wide field for industrial effort and achievement, immigration having only taken that direction during the past 18 months, and hence agriculture is just commenced. The Missouri Valley, from the mouth of the Sioux River to near Fort Thompson, is a broad fertile district with heavy supplies of timber and many advantages of markets, as yet inaccessible to other localities. Union County, lying between the Big Sioux and Missouri Rivers, and including part of the valley of each as well as the best of Brulé Creek Valley, is the oldest agricultural region of the Territory, and at present the most productive. The prairie lands lying between these valleys, and comprising the remaining two-thirds of the Territory, possess fine agricultural advantages, but distant alike from a market for sale or purchase. So situated, they must inevitably fill up more slowly than the favored valleys; yet, as the latter become populated, the former will create a demand for railroads, the building of which will equalize market facilities, and soon develop a rich, populous, and prosperous State.

The number of acres surveyed in the Territory from July 1, 1869, to June 30, 1870, inclusive, amounted to 1,165,316.47 acres, making the total surveyed up to the latter date 5,040,400.64 acres. The quantity of land disposed of by the Government during the last fiscal year was 129,475.92 acres, which, added to the amount previously disposed of, aggregates 5,835,603.02 acres, leaving the title still in the United States of 90,760,524.98 acres.

The land offices, established and in working order, are located at Vermillion and Pembina, where applications to obtain title to public lands of the Territory must be made. At the last session of Congress an additional district was created, and the town of Springfield has been designated as the site of the office, which will soon be ready for the transaction of public business.

IOWA.

Situated between Minnesota on the north and Missouri on the south, with the Mississippi River, on the east, dividing it from Illinois and Wisconsin, and the Missouri, on the west, separating it from Nebraska and Dakota, is the beautiful and fertile State of Iowa, extending from the parallel of 40° 30' north latitude to 43° 30', or about 208 miles, with an extreme length of 300 miles; and embracing an area of 55,045 square miles, or 35,228,800 acres.

The geographical position and character of the surface of this State

are most favorable for the rapid development of its many resources, the great natural arteries of commerce flowing past its eastern and western boundaries, offering ready and economical means of transportation for its produce, and the nearly level face of the country within its territory between the two rivers presenting extraordinary inducements for the construction of railroads through the State on the great lines of inter-oceanic communication, as well as between local points of growing importance consequent upon the increase of their commerce or manufactures. At the close of the year 1869 there were in Iowa 2,095 miles of railroad completed, or one mile to every 26.28 square miles of area, and one mile to every 596.60 inhabitants, the population being estimated at 1,250,000; the principal of the roads are the Chicago and Northwestern, running through the State from Clinton to Council Bluffs, and the Mississippi and Missouri, running from Davenport, through Iowa City and Des Moines, to Council Bluffs; these two roads constituting the connecting links between the Union Pacific Railroad and the network of railroads intersecting the country between the Atlantic seaboard and the Mississippi Valley. Other important roads are the Dubuque and Sioux City, McGregor Western, Burlington and Missouri River, and the Keokuk, Des Moines and Minnesota Railroads; these are nearly all completed, there being several other roads in the State projected and in course of construction, following the valleys of the principal streams, or connecting the cities and towns in these valleys and on the main lines of railroad and the Mississippi and Missouri Rivers. In addition to the means of transportation mentioned, Iowa has 500 miles of internal navigation on the Des Moines, Iowa, Skunk, and other rivers, besides the best of wagon roads over the prairies, intersecting the country in all directions, with good bridges and ferries crossing the several streams.

The surface of Iowa is generally a beautiful rolling prairie, with occasional high bluffs and precipitous descents near the water-courses, and with wide stretches of bottom lands of the greatest fertility, and sometimes belts of well-grown timber skirting the streams on either side; while on the highest elevations of the plateaus, between the valleys of the several streams, are frequent expanses of magnificent level prairie, extending as far as the eye can reach, with groves of timber and small lagoons, relieving the prospect and furnishing supplies of wood and water for the purposes of agricultural economy.

The soil of the prairies, whether level or rolling, possesses the greatest fertility, and is especially adapted to the culture of cereals and the growth of fruit and forest trees, while the ordinary plants and vegetables of domestic culture are produced with the greatest success thereon, the constituent chemical principles resulting in a very desirable combination of organic with earthy and saline matter, the surface soil being underlaid by the Devonian and carboniferous formations, with a basis of calcareous and magnesian rocks. The rapid growth of trees in the State is probably attributable to the favorableness of the climate and the presence in the soil of immense accumulations of the salts of potassa, caused by the former annually recurring prairie fires, usually occasioned by the Indians for the purpose of depriving the game of their cover in the dense growth of indigenous grasses and luxuriant undergrowth of timber. Since the suppression of these fires, or their restriction to narrow limits, consequent upon the occupation of the soil by agricultural settlers and the exodus of the aborigines, the natural growth of timber in the State has more than kept pace with its consumption as fuel and for building purposes, while forest culture has engaged the attention of the farmers

to a very large extent, and with the most gratifying success; it being estimated that the planting of a portion of a farm with forest, ornamental, and fruit trees will prove a profitable employment of the land and return ample products within a reasonable time.

The climate of Iowa is of course varied by its extending from north to south through three degrees of latitude, yet nowhere within its limits are insalubrious extremes of heat or cold to be found, the heat of the summer being tempered by generally prevalent western breezes, sweeping near the surface over the level plains and gentle undulations, removing malarious exhalations and surplus moisture, while the cold of the winter months is greatly mitigated by the general dryness and rarity of the atmosphere during this season of the year. The general sanitary condition of the State is shown to be improving every year, consequent, in every probability, upon the increasing cultivation of the soil, less waste of decaying vegetation, and larger growth of fruit and forest trees.

The manufacturing interests of Iowa are important, and constantly increasing in extent and value; the considerable fall of a majority of its streams, the facilities for obtaining wood and coal for fuel, the salubrity of the climate, and its adaptability to in-door occupations, presenting, in an eminent degree, the requisite conditions for the successful prosecution of several important branches of manufacturing enterprise, and these inducements are very rarely neglected by immigrants possessing the enterprise, energy, intelligence, and education so remarkably characteristic of the inhabitants of this beautiful State. The principal manufactures are at present those of flour, agricultural implements, machinery, engines and boilers, wagons, and woolen goods; but experiments are being made looking to the extensive introduction of cotton and other manufactures, which will, undoubtedly, result in the very large augmentation of the manufacturing capital of the State; the increase of the manufacturing population, and consequent greater home demand for agricultural products and larger profits for the farmer, gardener, fruit-grower, and herdsman.

The mineral resources of Iowa are very extensive and important, principally constituted of coal, iron, lead, copper, zinc, lime and building stone of different kinds; the latter chiefly comprising limestones and sandstones, although some specimens of marble from the State are remarkable for their beauty, particularly a variety known as the "birds-eye marble," found in the vicinity of Iowa City, being, apparently, of coral formation, presenting, upon a polished section, annular figures in dark color upon a grayish ground, but it is quite hard and brittle in texture, and therefore difficult of manipulation. The coal-fields of the State are situated principally in the central and southern portions, forming a part of the great carboniferous region of Missouri and Iowa, covering in the latter an estimated area of 25,000 square miles, from which there are now annually produced about 3,000,000 bushels, or 37,500 tons, of bituminous coal of excellent quality.

The lead mines are situated in the vicinity of Dubuque, which city received its first impetus from this fact, the annual product of this mineral from mines amounting in value to over \$300,000 per annum, and that of zinc, copper, and silver associated with the latter mineral, from mines in the same vicinity, amounting to over \$100,000 in value per annum.

In point of facilities for education, Iowa will compare favorably with any of the older States in the Union, taking into consideration comparative populations, having, besides an excellent system of district and higher schools, over sixty academies, colleges, and universities, among

the latter being the State university, located at Iowa City, occupying the former State capitol as its main edifice, with several newer structures, as a chapel, observatory, chemical laboratory, and State normal school building, this school being connected with the university. The Iowa State University is one of the most prosperous institutions of learning in the United States, considering the comparatively recent date at which it was founded, having an eminently competent and successful corps of instructors, excellent accommodations, a fine revenue from its domain granted in the early years of the State by its legislature, under acts of Congress providing for the furtherance of education by donations of the public lands, and is situated most desirably on a beautiful plateau overlooking the valley of the Iowa River, and in one of the healthiest locations of the western country, while the certain future increase in the value of its domain, as the population of the State and the demand for lands for agricultural purposes or for building lots increases, must eventually return to its treasury a greatly augmented revenue, and render it capable of competition in its attractions with any of the collegiate institutions of the country. Its management is liberal, its religious instruction favoring no particular sect, and it was one of the first institutions of the country to offer the full academical course and collegiate honors to the pursuit of females, the union of the sexes in its classes having been attended with so evident success in the excellent discipline and rapidity of improvement as to attract the attention of older colleges and induce their adoption of this progressive feature.

The population of Iowa is rapidly increasing; the principal elements of this increase being of a Scandinavian and Teutonic character, so far as immediately derived from European nations, while its greater numbers and controlling characteristics are furnished by the enterprising and enlightened inhabitants of the Middle and Eastern States of the Union, who find here the intelligent companionship, the religious observance, temperance, and respect for advanced education, forming the chief attractions of their more eastern homes, while the delightful climate and productive soil serve to atone in great measure for deprivations incident to emigration. The increase of the urban population is even greater in its ratio than the rural, exhibiting an evidence of the growth and prosperity of the commerce and manufactures of the State. Among the principal of the cities are Davenport, Dubuque, Keokuk, Iowa City, Muscatine, Des Moines, Burlington, and Council Bluffs.

Des Moines, the capital of Iowa, situated at the head of steam navigation on the Des Moines River, contains a population of about 10,000, and lies in the heart of a rich agricultural and mineral country, on one of the main lines of interoceanic railway travel, having direct communication with Omaha and Chicago, via the Mississippi and Missouri Railroad; the principal commercial centers of Eastern States, via the Burlington and Missouri Railroad; and with St. Louis and the southern seaports, via the Des Moines Valley Railroad; while roads rapidly advancing toward completion, running through the center of the State toward its northern boundary, will place it on one of the most direct lines of railway travel from the South and East to Central Minnesota and the great Northwest.

Davenport is one of the most beautifully situated cities on the Mississippi River, which flows at this point in a general direction from east to west, the city being upon its northern bank, with high bluffs behind and above protecting the levee from the occasional high winds of this locality, which, united with the rapidity of the stream, sometimes renders the

landing of steamers extremely difficult at some of the most prominent points on the river. In view of this favorable location, as well as the extensive manufactures of the place, the railroad connections, and the highly productive agricultural country by which it is surrounded, the commerce of Davenport is very extensive and rapidly increasing. This city is immediately opposite the city of Rock Island, Illinois, being connected therewith by the magnificent bridge of the Mississippi and Missouri Railroad, the first structure erected across the wide-stretching "Father of Waters." The population of Davenport is estimated at about 21,000, and the amount of capital invested in its manufactures exceeds \$1,000,000.

Dubuque, with a population about the same in numbers as Davenport, is the oldest city in the State, having been settled by a party of Frenchmen in the year 1686, who built a fort on its present site and instituted a trade with the Indians, which constituted the sole support of the place for more than a century. Since the discovery of the lead mines in its immediate vicinity its wealth and population have been steadily increasing while the more recent extensive developments of its commerce and manufactures, consequent upon the rapid settlement of the surrounding country and the natural advantages of the place, have given it a new impetus and rapidly increasing importance. Its yearly aggregate commerce exceeds \$17,600,000, the principal branches being the trade in lumber, flour, wheat, corn, oats, pork, and live hogs. The State census returns of 1868 show the shipment from this place during that year of 34,000,000 feet of lumber, 100,000 barrels of flour, 2,000,000 bushels of wheat, 17,600,000 pounds of pork, and 25,000 live hogs. The manufactures for the same year were returned as covering in value the sum of \$3,513,000. The city contains two lines of street railways, 19 churches, and 61 public schools, having an average attendance of 3,000 pupils.

Iowa City, the former capital of the State, is delightfully situated on an elevated but gently undulating plateau on the east side of the Iowa River, which is navigable as far as this place for light-draught steamers, and immediately above becomes quite rapid, affording most excellent water-power, thus rendering this locality desirably situated for manufactures as well as general inland commerce, both of these branches of industry being already well and firmly established here, as shown by the busy woolen, flouring, linseed oil, and paper factories, and capacious warehouses and grain elevators; while the great advantage of this city, in connection with these interests, promises greatly increased wealth and augmented population for its immediate future.

Burlington is a beautiful town on the Mississippi River, containing between 15,000 and 16,000 inhabitants, and is the eastern terminus of the Burlington and Missouri River Railroad, having direct connection with Chicago and the East, via the Chicago, Burlington and Quincy Railroad. Muscatine, with a population of 6,753, is the natural outlet for a large tract of highly productive agricultural country, and has an excellent steamboat levee and railroad connection, both east and west, by a branch of the Mississippi and Missouri Railroad.

Council Bluffs has a population of 10,000, and is situated on the east side of the valley of the Missouri River, nearly opposite Omaha, Nebraska, being the western terminus of the Mississippi and Missouri and Chicago and Northwestern Railroads, and the point of connection of these roads with the Union Pacific.

The Iowa State census of 1868 reports 9,089,491 acres of land inclosed for cultivation; 1,162,954 being given to the culture of wheat and producing 16,099,072 bushels; 554,798 acres being in oats and pro-

ducing 17,447,643 bushels; 2,191,635 acres in corn, producing 62,621,831 bushels, or more than any other State in the Union; 91,978 acres in rye and barley, yielding 1,859,627 bushels; 28,375 acres in sorghum, producing 2,304,012 gallons of molasses and 16,166 pounds of sugar. In the same year 3,167,959 bushels of potatoes were gathered from 102,171 acres, and 656,371 tons of hay from cultivated grasses, and 905,468 tons from the indigenous grasses of the prairies. The returns also show 1,182,694 fruit trees in full bearing, and 3,992,767 not yet producing; also, an annual product of 604,096 pounds of grapes, 32,444 gallons of wine, 423,500 pounds of tobacco, 53,518 pounds of hops, 986,419 pounds of honey, and 39,992 pounds of beeswax.

The returns of live stock include 491,801 horses and mules; 1,411,000 cattle, including 359,214 cows, yielding 21,111,997 pounds of butter and 1,544,250 pounds of cheese; and 1,899,853 sheep, yielding 5,855,723 pounds of wool.

Considering its many attractions, the fertility of its soil, the salubrity of its climate, and its eminently favorable geographical position for the ready transportation of its products, whether agricultural or mineral, or those of its manufactures, to the best markets in the country, as well as in view of its millions of acres, as yet neither under cultivation nor used as pasturage, the magnificent water-power upon its streams yet unchained to the servitude of man, and its vast undeveloped mineral resources, Iowa presents inducements for immigration to the industrious and enterprising scarcely to be excelled upon the continent. There are yet to be disposed of in this State of the public lands constituting the government domain 1,192,580.36 acres.

MISSOURI.

This State, situated nearly in the geographical center of the Union, was first settled by the French at St. Genevieve, on the Mississippi, in the year 1763. Forming a part of the French province of Louisiana, it was acquired by purchase from France in 1803, was organized into a Territory in 1804, and admitted into the Union March 2, 1821. The State has an area of 65,350 square miles, or 41,824,000 acres.

Occupying a central position in the Mississippi Valley, bounded along its entire eastern frontier by the Mississippi, and traversed from west to east by the Missouri River, which forms also a part of the western boundary of the State, the situation of Missouri is admirable for controlling the vast commerce of the great interior basin of the continent. That part of the State south of the Missouri, comprising three-fifths of its entire area, is an undulating country rising gradually toward the southwest and culminating in the Ozark Mountains. At Cape Girardeau, on the Mississippi, commence the highlands, which extend northward to the mouth of the Missouri, rising between St. Genevieve and the Maramec River, in solid masses of limestone, more than three hundred and fifty feet above the surface of the river.

From the Mississippi, these highlands extend westwardly across the State, losing their rugged character as they approach the Osage River. This elevated region embraces one-half of that part of the State south of the Missouri, and is in some localities extremely hilly and broken, the hills often rising from 500 to 1,000 feet above the surrounding country. These hills do not form continuous ranges, but rise in knobs and peaks, and are usually clothed to their summits with a growth of pine and cedar. This region is drained by numerous rivers, along which are found bottom lands of great fertility. West of this hilly

region, the country, especially in the valley of the Osage River, is principally rolling prairies, interspersed with tracts of timber, while to the north, along the Missouri, there is found an extensive alluvial bottom, possessing rich and productive soil, and which is more densely populated than any other portion of the State, except in the vicinity of the confluence of the Mississippi and Missouri. A large portion of this region is, however, still in its natural state, and covered with a dense growth of the finest timber. It possesses, in addition to its fertile soil and abundant forests, a mild, dry, and genial climate, and with the constantly increasing facilities for transportation afforded by the rapid extension of the railway system of the State, a tide of immigration is fast filling up the country, which bids fair soon to become one of the most populous and flourishing localities within our broad domain. In the extreme southeast there is a large area of lowlands, extending along the Mississippi, commencing near Cape Girardeau, and extending south far into Arkansas. Large portions of this tract have been subject to inundation since the earthquakes of 1811.

There are many extensive swamps, timbered with cypress and other trees indigenous to lands of this character, and so dense is the growth that they are often almost impenetrable. Within this region are many lakes and lagoons, while here and there are tracts elevated above the reach of the highest floods. A considerable portion of this low country is capable of reclamation, possessing all the elements of fertility, and would become very valuable if so reclaimed.

North of the Missouri the surface of the country is mostly rolling or level, the latter embracing the remarkably fertile bottom lands of the Mississippi, Missouri, and their affluents, while the remainder consists of broad undulating prairies, sloping gently in the direction of the valleys of the many fine streams with which this region is favored. The upland prairies are entirely destitute of timber, but along the margins of the numerous rivers there is usually an abundant supply.

The principal rivers of Missouri are the Mississippi, which washes its whole eastern boundary, a distance of 470 miles, and the Missouri, which flows along the western boundary of the State for more than 200 miles to the point where it receives the Kansas River, and thence flowing southeastwardly across the State to the Mississippi. These mighty streams, navigable for hundreds of miles beyond the limits of the State, and bearing upon their bosoms innumerable steamers and other crafts laden with the products of many climes, the grain, fruit, and lumber of the Great Northwest, the cotton and sugar from the South, and the manufactures of the East, are too well known to need particular description here.

The principal affluents of the Mississippi in this State, besides the Missouri, are the Wyaconda, North and South Fabius, Salt, Au Caioze, and Maramec.

The most considerable streams flowing into the Missouri from the north, are the Chariton, Grand, Platte, and Nodaway, each navigable for some distance, and from the south, the La Mine, Osage, and Gasconade.

The chief importance of the country drained by the Gasconade is its vast supply of timber, while the immense water-power of the river affords the best facilities for the manufacture of lumber. The Osage has its source in the State of Kansas, and flows in a general easterly direction, uniting with the Missouri a few miles below Jefferson City. It is in length about 400 miles, and is navigable through half its course.

Numerous springs, possessing various medicinal qualities, are found in

many parts of the State, some of which have attained considerable notoriety; the Cheltenham Springs, in St Louis County, Elk Springs, in Pike County, and the Choteau, in Cooper County, being the most celebrated.

The climate of Missouri is subject to extreme and frequent changes of temperature, but is nevertheless remarkably healthy, the atmosphere being dry and pure, and is peculiarly favorable to persons afflicted with diseases of the respiratory organs, as may be seen by comparing the ratio of deaths from those diseases in Missouri with those of other localities; the percentage of the entire mortality in Missouri being, according to the United States census, but 10.93, while in the New England States it is above 25, in Michigan, 24, and in New York, by the State census of 1855, 23.42 per cent.

The soil of Missouri is remarkable for its variety and fertility. In the hilly country, embracing a large portion of the State south of the Missouri, the soil is composed principally of disintegrated sandstone, syenite and magnesian limestone.

The soils formed of the last two materials are usually very fertile, although in the mineral region their productiveness is occasionally impaired by the presence of iron oxides.

In the neighborhood of the headwaters of the Big Black, Current, and White Rivers, the surface is quite rugged, the soil, consisting mainly of semi-vitreous sandstone, is less fertile, although it supports a heavy growth of the finest yellow pine. North of the river the soils are calcareous and arenaceous, the former, which predominates, being exceedingly productive, especially near the margins of the rivers. The rich and extensive bottom lands of many of the rivers, formed of alluvion, produce abundant crops of all the grains and fruits of the temperate zone.

The agricultural capacities of the State, enhanced by the genial climate, the fertile character of the soil, and the facilities for transportation, are attracting increased attention.

The returns of the census for 1860 exhibited an advance of from 50 to 500 per cent. over the aggregate of 1850, in the production of live stock, cereals, tobacco, rice, fruits, wines, butter, cheese, molasses, wool, and orchard and garden products.

It is expected that the census of the present year will show an equally favorable increase, notwithstanding the fact that the progress of a large portion of the State was considerably interrupted during the late war.

The great staple is Indian corn, the rich prairies and warm summers being particularly adapted to its growth. The production of hemp in Missouri is exceeded only by that of Kentucky, the alluvial bottoms of the Mississippi, the Missouri, and some of their tributaries, being most favorable for its cultivation. Considerable quantities of cotton are raised in the southern part of the State. The fruits of the orchard and vineyard are noted for their size and delicacy of flavor. In this climate fruit trees bear early, produce abundantly, and ripen their fruit in the greatest perfection.

In horticulture the vine will doubtless take the lead, as both scientific examination and experience prove that it can be cultivated with entire success in favorable localities in all parts of the State. Missouri possesses many species of native grapes, and the growth of the vines is so luxuriant that they form a conspicuous part of almost every copse and thicket. It has been estimated that the vineyards yield an average of 250 gallons per acre, which, at \$1 60 per gallon, would give an annual income of \$400, and as the average cost of cultivation is not more than \$100, there is left a net profit of \$300 per acre.

Millions of acres of land in Missouri, so situated that they have been considered almost worthless, are, in fact, the most valuable lands in the State for grape culture. A variety of both white and red wines, of most excellent quality, is now made, which meets with great favor among the people, and will doubtless supplant, in a great measure, the use of distilled liquor as a beverage, thus promoting the cause of temperance; it being a well-known fact that in countries where good wines are abundant, and so cheap as to be within the reach of all classes, intemperance is uncommon.

To the stock-raiser Missouri presents the greatest inducements. Owing to the cheapness of lands, their great fertility, the small amount of labor necessary to produce an equal amount of winter feed, the mildness of the climate rendering less winter feed necessary, and the great "range" available in the State, horses, mules, cattle, sheep, and hogs can be raised with much greater profit than in the Northern and Eastern States.

The mineral wealth of Missouri is incalculable. There is probably no equal area in the world which surpasses this State in the variety and richness of its mineral deposits. Coal, iron, lead, copper, zinc, cobalt, nickel, plumbago, emery, kaolin, fire-rock, fire-clays, granite, marble, limestone, mill and grind stones, lithographic stones, vitreous sand, metallic paints, jasper, agate, and chalcedony are among the minerals which abound in various parts of Missouri—most of them in quantities that are literally inexhaustible, and in many of them the mines and quarries could supply the markets of the world. The presence of some of these minerals has been determined by an incomplete geological survey or the rude efforts of the unscientific miner, but when a more perfect survey shall have been made, and systematic mining been extensively prosecuted, far richer developments may justly be expected.

Of the precious metals only traces have been discovered. Zinc is found in great abundance; in fact, it has often retarded the mining of more valuable ores. Thousands of tons of the ore have been thrown away at the lead mines as a worthless impediment to the progress of the miner.

Copper has been found in more than twenty counties, the deposits being often very extensive, and the ores sometimes yielding as high as 48 per cent. of pure copper. Lead exists in more than five hundred localities, its veins running through 31 counties, the richness of the mines being unsurpassed. The yield of Perry's mine in 1854 was 12,000,000 pounds, and of Vallé's mine in the same year 13,000,000 pounds. From Selma alone there were shipped, from 1834 to 1854, 70,000,000 pounds.

Coal underlies a large portion of the State, having already been discovered in 36 of the central and western counties, embracing an area of nearly 27,000 square miles. In St. Louis County there are 160 square miles of coal lands. The deposits in the vicinity of Booneville cover an area of 2,000 square miles, with an average thickness of three feet, and are believed to contain 60,000,000 tons of coal. It has been estimated that the entire deposits of the State are equal to 130,000,000,000 tons, or, in other words, sufficient to afford a supply of 10,000,000 of tons per annum for a period of 13,000 years. The mines of Missouri present a favorable contrast to the collieries of Europe. The former are shallow, cool, and healthful. The seams are generally of sufficient thickness to permit the miner to work in an erect position, and the galleries are free from those poisonous gases and fatal explosions so common in the mines of England.

Iron abounds in various portions of Missouri, but in St. François, Iron, and Reynolds Counties there are mountains of almost solid iron rising hundreds of feet above the surrounding country, and containing a supply comparatively inexhaustible.

Iron Mountain is 228 feet in height, and the area of its base is 500 acres. It is estimated to contain 230,000,000 tons of ore above the surface and 3,000,000 tons for each foot beneath the surface. At a depth of 180 feet an artesian auger still penetrates solid ore. Shepherd Mountain is 660 feet high; the ore is magnetic and specular, containing a large percentage of iron.

Pilot Knob is 581 feet in height, its base covering 360 acres, the iron being known to extend 440 feet below the surface.

In many localities minerals underlie the richest land, so that the owner may at once possess a fertile farm with a valuable mine, and whether agriculture or mining be his pursuit, a rich reward awaits his industry.

Excellent granites and many varieties of compact, fine-grained, durable marble, exist in great abundance. A fine quality of lithographic stone is found in Macon County. Paints of all colors can be made from the minerals with which the State abounds, the supply of ochers, barytes, uranium, manganese, cobalt, red chalk, China clay, and terra sienna exceeding any probable demand for their manufacture. Fire-rock, so necessary for lining the smelting furnaces, is found in the immediate vicinity of the mines, and of a much more durable quality than that formerly imported. The best plastic clay, kaolin, and sand suitable for the manufacture of glass exist in enormous quantities.

Thus we see that Missouri embraces within her borders all the natural elements of prosperity, her magnificent forests, fertile prairies, navigable rivers, unfailing water-power, and vast mineral wealth needing but the hands of industry and art to enable her to achieve a success beyond all precedent.

The railroad system of Missouri is already well advanced, and a great enlargement is contemplated. The Hannibal and St. Joseph, the North Missouri, Missouri Pacific, Atlantic and Pacific, and St. Louis and Iron Mountain Railroads, are the most important lines now in operation.

Ample provision has been made by the State for the promotion of education; a gift of section No. 16 in every township having been made by the General Government for the benefit of schools in such townships, besides valuable lands granted in support of a university.

The public-school law of Missouri is liberal and equitable, and immigrants will find in the State not only rare opportunities for material success, but excellent facilities for the education of their children.

Jefferson City, the seat of the State government, is located on the right bank of the Missouri, 128 miles by land, and 155 by water, west of St. Louis. The situation is elevated and picturesque, commanding a fine view of the river and the cliffs on the opposite shore. It contains the State-house, governor's residence, State penitentiary, and has a population of about 5,500.

St. Louis, the chief city of the State, and the commercial metropolis of the Mississippi Valley, is situated on the west bank of the Mississippi at an altitude of 400 feet above the level of the sea. It is 20 miles below the mouth of the Missouri and 200 above the confluence of the Ohio. It is in the geographical center of a valley which embraces 1,200,000 square miles of territory, and commands more than 16,000 miles of river navigation. It is a well-built city, with wide, well-paved streets, a spacious levee, commodious warehouses, and is noted for her manufacto-

ries, fine hotels, universities, public schools, libraries, and charitable institutions. The population of the city is estimated at nearly 300,000.

St. Joseph, Hannibal, Kansas City, Lexington, Weston, St. Charles, and Boonville are among the other towns of note in the State.

The public lands undisposed of in Missouri amount to 734,632 acres.

ARKANSAS.

This State, comprising a portion of the country acquired by purchase from France in 1803, was erected into a separate Territory March 2, 1819, and was admitted into the Union June 15, 1836. It lies between the parallels of 33° and 36° 30' north latitude, extends through five degrees of longitude, and is bounded on the north by the State of Missouri, on the east by the St. Francis and Mississippi Rivers, on the south by Louisiana and Texas, and on the west by the Indian Territory and Texas. The State embraces an area of 52,198 square miles, or 33,406,720 acres, of which there remained undisposed of on the 30th of June, 1870, 10,942,848.89 acres. The population of the State in 1860 was 435,450.

In physical configuration the surface of the State presents great variations. The country for 30 to 100 miles west from the Mississippi is generally low, containing numerous lakes and swamps, and is, except in some more elevated portions subject to inundation by the annual overflow of the Mississippi, Arkansas, and St. Francis Rivers. Beyond this level country the surface is moderately hilly, rising gradually toward the west. The western and northwestern sections consist of extensive prairies, interspersed with ranges of mountains. The Ozark Mountains, commencing near Little Rock, extend in a northwesterly direction beyond the limits of the State. They have an elevation of from 1,500 to 2,000 feet. The mountains south of the Arkansas River, called the Masserne Range, stretching in a northeast and southwesterly direction, are masses of barren gray sandstone.

Arkansas, though an interior State, is abundantly supplied with navigable rivers, so distributed as to give free access by steamers to nearly every portion of the Commonwealth. Almost the entire eastern portion of the State is bounded by the Mississippi, the length of the shoreline on this river being about 400 miles. The Arkansas, one of the largest tributaries of the Mississippi, rises in the mountains of Central Colorado, and flowing eastwardly through that Territory, Kansas, and the Indian Territory, it crosses the State of Arkansas in a southeasterly direction. The entire length of the river is 2,000 miles; it is navigable entirely across the State, and in high water far up into the Indian Territory. The St. Francis River rises in Southeastern Missouri, and flows through a low country, subject to annual inundation, and interspersed with lakes and cypress swamps, the latter sometimes covered with such a dense growth of vegetation as to be almost impenetrable. This river is navigable to the Missouri line, a distance of 150 miles. White River rises in Southern Missouri, and, flowing in a general southerly direction, joins the Arkansas near its mouth; it is navigable at all times for a distance of 350 miles, and at high water 100 miles further. Black River, an affluent of White River, rising in Southeastern Missouri, is navigable for small boats to the Missouri line. The Washita drains almost the whole of that part of the State lying between the Arkansas and Red Rivers, and is navigable for 250 miles. Saline River, a branch of the Washita, is navigable for 100 miles. The Red River, which flows

through Southwestern Arkansas, is navigable throughout its course in the State.

The State contains 61 counties, and of these 43 are watered by navigable streams, which, with their branches, make a navigable highway within the State of over 3,000 miles, available throughout the year, as in this latitude navigation is never obstructed by ice.

Among the most remarkable of the natural wonders of Arkansas are the Hot Springs. These springs, 54 in number, are justly celebrated for their curative properties, and are much resorted to by invalids from all parts of the country, who rarely fail to derive great benefit from the use of the waters. The springs vary in temperature from 93° to 150° F., and all contain carbonates of the alkalies and alkaline earth agents, which are known to therapeutists to produce valuable alterative effects in chronic diseases. The country in the vicinity of the springs is mountainous and picturesque, the water is pure, the air elastic and invigorating, affording a delightful retreat for both invalids and pleasure-seekers. In Montgomery County, 20 miles from Hot Springs, are the famous Crystal Mountains. Dr. Owen, in his Geological Reconnaissance of Arkansas, when speaking of these mountains, says that there is at present no region known on this continent which presents such extensive mines of rock crystal as the gorges and mountainous ridges of this county, almost every fissure in this vast sandstone formation being studded with these brilliants of all sizes from the fraction of an inch to five and six inches in length.

The climate of Arkansas is mild and salubrious. Sudden changes of temperature are less frequent than in the Eastern States in the same latitude, and the fierce "northers," which, further west, sweep down to the Gulf, are unknown in this State. The thermometer does not show as high a temperature as in the more northern States, and in the short winter rarely falls as low as zero.

Within the limits of this State are found almost every variety of soil and scenery, from the extensive level bottom lands along the Mississippi to the beautifully undulating woodlands and prairies of the central and western portions of the State, and the rugged mountains of the northwest. The bottom lands are not excelled in fertility by any in the world; the soil is remarkably deep and rich, and will yield on new land from 80 to 100 bushels of Indian corn to the acre. The soil of valleys between the hills, though not as rich as the bottom lands, produces all kinds of crops. The hills and slopes are well adapted to the growth of fruit, and for grazing purposes cannot be surpassed.

The situation of Arkansas is peculiarly favorable for the pursuit of agriculture. Exempt alike from the scorching heats of the extreme South, and the bitter cold of the North, her genial climate and fertile soil produce in abundance the grains and fruits of both regions. Cotton has always been the great staple of the State, as well as the most profitable of the products of the soil. With the exception of a narrow strip upon the coast of Georgia, there is probably no country in the world that can produce, upon a given area, a greater quantity of the finer qualities of cotton than the bottom lands of this State. Four hundred and fifty pounds per acre is considered a fair crop, which at present prices is nearly double the value of the wheat or corn crop of the more northern States. The rich, warm soil of the bottom land is also particularly adapted to the growth of Indian corn, crops of 80 bushels per acre being not unusual, and with an improved system of culture, this quantity could doubtless be greatly increased. Wheat in favorable seasons produces immense crops in the bottoms, though it is not consid-

ered as sure a crop as in the hilly portions of the State, where the average yield is about 22 bushels to the acre. Winter wheat is usually grown, and the grain is of superior quality. Oats, rye, barley, peas, and beans produce abundantly in every section of the State. The delicious Lima or butter bean may be grown with as little care as the common white bean, and yields enormously. Irish potatoes produce abundantly and keep well. Sweet potatoes, of the finest quality, are grown in almost every portion of the State, and crops of 400 to 500 bushels to the acre are not uncommon. All varieties of garden vegetables are raised in the greatest perfection, and, owing to the early springs and late autumns, the markets are well supplied from April till Christmas. A superior quality of tobacco has long been grown here, and hemp and hops produce bountiful crops. The corn crop of Arkansas, for 1868, was over 32,000,000 bushels, wheat, 1,000,000 bushels, and tobacco, 2,500,000 pounds.

Orchard fruits, such as apples, peaches, pears, plums, and apricots, are abundant. The peaches are particularly large and well flavored. There is no locality in the Union better adapted to the culture of the vine than this State. The Catawba, Diana, White Hamburg, and Delaware have been cultivated for years, and have never failed or been troubled with mildew. South of Fort Smith, a large white grape, of delicious flavor, grows wild, and wild grapes of different varieties are found in all parts of the State.

For stock-raising Arkansas possesses eminent advantages. Cattle, horses, and mules keep in good condition the year round in the central and southern portions of the State without any care whatever on the part of their owners. A variety of nutritious grasses, and the small cane, which, in many localities is green throughout the year, furnish most excellent pasture. Owing to the abundance of mast in the woods during the fall, hogs are raised without cost.

Wild game, consisting of bears, deer, turkeys, ducks, prairie chickens, and quail, is abundant, and the rivers, lakes, and bayous are well stocked with fish, among which are pickerel, black bass, buffalo, and catfish, the latter sometimes weighing 150 pounds.

Arkansas is extensively supplied with timber of many varieties. Pine of the finest quality is found in the hill country, and occasionally in the bottoms. Dense forests of cypress grow on the bottom lands, and along the lakes, and bayous, and single trees are often met with that will yield 6,000 feet of lumber. Many varieties of oak flourish here, the most important of which are the white oak, and a species called "overcup," resembling the white oak, often found five feet in diameter. The "overcup," on account of its great size, is particularly adapted to the manufacture of pipe-staves, which, in the New Orleans market, are worth \$150 per thousand, and as large quantities of the timber can be obtained convenient to navigable streams, the manufacture is sure to prove highly remunerative to any one engaging in the enterprise. In some localities there is a heavy growth of black walnut, which must eventually prove of great commercial value. Extensive tracts of red cedar occur in the northern and western parts of the State. There are numerous other kinds of timber found in the State, each of which will find its legitimate use as the demand arises for particular qualities.

Owing to the fact that agriculture has afforded employment for all the capital and labor of the State, and has proved so highly remunerative, the development of the mineral resources of Arkansas has hitherto received but little attention. It has been ascertained, by geolog-

ical surveys and other sources of information, that the various useful minerals exist in many parts of the State in quantities sufficient to place her in the front rank of the mineral States of the Union. Vast beds of anthracite, cannel, and bituminous coal are found extending through twelve different counties. Iron, lead, and zinc are abundant, and the deposits of gypsum and manganese are comparatively inexhaustible. Work has been commenced at the lead mines twelve miles north of Little Rock; the ore is argentiferous, and the silver obtained covers the entire expense of working, leaving the lead a clear profit. Copper is found in paying quantities; and marble, whet and hone stone, rock-crystal, mineral paints, kaolin, granite, freestone, limestone, various kinds of marl, grindstones, and slate, are distributed throughout the State.

The various manufactures of Arkansas have largely increased within the past few years, and the greatest inducements are still presented by the magnificent forests, splendid water-power, and exhaustless mineral deposits, for the introduction of capital and labor, with every prospect of immediate and profitable returns.

The State constitution requires that every child shall attend the public school for a term equivalent to three years, during the period between the ages of five and eighteen years, unless educated by other means; and a very efficient school law has been enacted which secures to all ample school privileges. The General Government has donated, in addition to the sixteenth section in each township, 46,080 acres of land to aid in establishing a seminary of learning in this State.

By a wise provision of the State constitution homesteads of not exceeding 160 acres are exempt from execution, and the benefits of this exemption, in case of the death of the head of the family, inure to the widow, and to the children during their minority. The personal property of every resident citizen, to the value of \$2,000, is also exempt from sale or execution for any debt incurred subsequent to the adoption of the present constitution, thus precluding the possibility of any one's being deprived of a home.

Little Rock, the seat of the State government, is situated on the right bank of the Arkansas, about 300 miles above its mouth. It stands on a high, rocky promontory, and commands an extensive prospect. The city is regularly laid out, and contains, besides the State and court houses, a United States arsenal and the State penitentiary. Arkansas Post, 50 miles above the mouth of the Arkansas, is the oldest town in the State. Fort Smith and Van Buren, near the western boundary of the State, are towns of considerable commercial importance.

Offices for the disposal of the public lands are located at Little Rock, Harrison, Dardanelle, and Washington.

KANSAS.

This State, bordering on the west of Missouri, lies between 37° and 40° of north latitude and $94^{\circ} 38'$ and 102° of west longitude from Greenwich, covering an area of 81,318 square miles, being in the shape of a parallelogram, embracing an extent of country more than ten times the size of Massachusetts, one-fifth larger than its neighboring State, Missouri, and exceeding by one-third the surface of England.

Kansas is preëminently agricultural, and in this respect ranks high. In its agricultural character it may be divided into two portions, each having its own peculiar advantages, that in the east being specially adapted to farming and the other to grazing purposes.

In Eastern Kansas we note the rank vegetation pertaining to rich alluvial districts; the bottom lands are covered with heavy growth of forest trees, comprising the elm, black walnut, hackberry, ash, and cottonwood; the uplands supporting rich prairie grasses and a variety of plants, exhibiting a strange mingling of northwestern and some southern farms, corresponding to the peculiar mild climate which characterizes this section.

Proceeding westward a gradually increasing atmospheric aridity is evidenced by a corresponding disappearance of forest growth, which is confined to the moist margins of streams or water-courses dry during the summer season, and is represented only by the cottonwood, box elder, and willow.

On the uplands of the west buffalo grass and gama take the place of the rank prairie sod, and are characterized by a short curly growth, with dense fibrous roots, often growing in clumps and penetrating deeply into the dry, though nutritious, soil.

In the extreme west we find depressed basins and valleys exhibiting a white saline efflorescence, due to the intense evaporation which in the dry season concentrates the saline ingredients derived from the marled soil of the uplands on the saturated bottoms overflowed in the season of rains. In this portion of the State we therefore meet with a class of saline plants, many of them identical with such as are found along the sea-shore or in connection with salt marshes. Here, too, the uplands acquire more distinctly an arid feature, to which, however, the term of desert cannot be properly applied, as, although in a great measure unfit for ordinary agriculture, they still support a close growth of peculiar grasses, which in the rainy season of summer assume a dull verdure, and in the succeeding dry season become converted into a nutritious hay, the saccharine juices being concentrated in the dried perennial stem and leaves. On the upper alluvial branches of the principal valleys are found dense moorish growths of wild sage, (*Artemisia*,) *Sarcobatis*, and *Obione*, or greasewood.

It appears that while the eastern portion of the State is better adapted to agricultural purposes, the western is an excellent grazing country.

There are no mountain chains within the State, but its surface is diversified by a succession of gently undulating hills, stretching off into ridges and intervening valleys.

In the agricultural division of Kansas the land is well suited to each of the principal crops, needing but enterprise and the application of the art and science of farming to obtain bountiful harvests.

The average yield of staple crops exceeds nearly every other State, as is shown by the following statistics:

Average yield of wheat per acre is 19 bushels; spring rye 26, and winter rye 13 bushels; barley, 31 bushels; oats, 42 bushels; corn, 48 bushels; buckwheat, 19 bushels; Irish potatoes, 149 bushels; sweet potatoes, 110 bushels; hay, nearly 2 tons per acre.

Much attention has also been paid to the cultivation of fruit in the settled portions of the State, and it has now become a very important branch of industry, the climate and soil being well adapted to this purpose. The total value of the orchard products amounts to \$160,000, and that of garden products to \$144,000, while the estimated value of all farm production, including additions to stock, is \$24,000,000.

Two millions of acres are now under improvement, the products of which may be given as follows: 312,000 in corn; 117,700 in wheat; 3,200 in rye; 91,400 in oats; 2,600 in barley; 1,400 in buckwheat; 537 in peas and beans; 19,600 in potatoes; 221,000 in hay, and 30 in tobacco.

From these acres were produced as follows: 15,000,000 bushels corn; 2,100,000 bushels wheat; 64,200 bushels rye; 3,840,000 bushels oats; 84,000 bushels barley; 26,400 bushels buckwheat; 16,100 bushels peas and beans; 2,158,000 bushels potatoes; 441,000 tons hay, and 30,000 pounds of tobacco.

Next to Texas this State is at present the leading one west of the Missouri for stock-raising. As indicative of the interest taken in this business the statistics of the State show the following amount of live stock: 120,000 horses, 12,400 mules and asses, 123,500 milch cows, 22,000 working oxen, 235,400 beeves, 120,500 sheep, and 196,100 swine, having a total valuation of \$22,945,000.

No State of the Union has a climate and soil better adapted to sheep husbandry than Kansas, and already, as above shown, the subject has received marked attention. The entire western part of the State is well adapted to this branch of business, and no doubt this portion of country will be rapidly settled by persons devoting themselves to the breeding of sheep and other stock. The production of wool for the last year was 304,000 pounds, much of which was shipped to eastern markets.

Cotton also has been grown in the southern part of the State, but to a very limited extent. The experiment, however, has shown the adaptability of that part of Kansas to this plant and the large profits that may be realized by those fully acquainted with the business. The amount raised during the last year was 7,725 pounds.

Flax and hemp also are congenial to the soil and climate of Eastern Kansas, but little attention has yet been given to their culture.

The climate and soil of Southern Kansas have given rise to the opinion that the tea plant could be cultivated with success, but the producing classes have so far given it little attention.

The wild growth of the mulberry throughout the State has given to some enterprising minds the idea of silk culture, and a colony of Frenchmen now in existence in Franklin County have successfully experimented in this matter.

Kansas contains none of the precious metals for which the political divisions of the Pacific slope are so famous, yet the State is not without minerals requisite to the immediate wants and comfort of the people. Coal for fuel has been discovered in two parts of the State: first at Leavenworth, on the Missouri River, near the northern line; and second, in the southeastern part of the State, in Linn, Bourbon, and Cherokee Counties. At a depth of 700 feet the Leavenworth Coal Company reached a vein of bituminous coal of superior quality, 30 inches thick. This vein, it is now discovered, belongs to the middle coal measures, and is found to overlay the thickest coal beds. The company is actively engaged in mining operations, and is now producing 900 bushels per day, which sells readily at 17 cents per bushel, and it is expected that 2,000 bushels per day can be raised in a short time, as the quantity steadily increases as the work progresses.

In the coal fields of the counties above mentioned, the miners are at work and quantities of excellent bituminous coal are being taken out.

Salt in abundance is found, there being large fields in the valleys of the Republican, Solomon, and Saline Rivers, in the northern part of the State and about midway east and west, while on the southern boundary, in the reserve of the Osage Indians, exists a salt field 30 miles wide by 60 miles long, probably the largest in the world. Gypsum, alum, iron ore, and petroleum are also found.

The State has also become noted for its building materials. These are comprised under the names of "Leavenworth marble," "Junction

City marble," and "Permian limestone," the last being the most valuable, and of different shades of color, so that many varied tastes may be suited in the selection for residences. There is also found a dark ferruginous sandstone, which, when well dressed, would equal the brownstone so extensively used in the mansions of New York. The geological character and extent of these stones is fully set forth in the able and interesting letter of F. Hawn, esq., appended to this report.

The abundance of cheap fuel, indicated by the extent of the coal fields and the numerous water-courses of Kansas, affords superior facilities for manufacturing. The northern portion of the State is watered by Big and Little Blue Rivers, the Grasshopper, Republican, and Solomon Fork, all feeding the Kansas River, while in the south there exist the Osage, Neosho, Spring River, Fall River, the Verdigris, Cana, Cottonwood, and Whitewater, affording excellent water-power, which has been partially improved. There are in existence 675 factories, paying taxes to the General Government as such, while many small establishments exist not brought within the limits of the revenue statistics.

The factories comprise six woolen mills, Burlington, Fort Scott, Wathena, and Leavenworth, each having one, and Lawrence two; the latter running 480 spindles, using daily 100 pounds of wool. The combined capacity of the four other mills is 186,000 pounds per annum, making a grand total of 217,000 pounds employed yearly in the manufactories. Almost every branch of industry is represented in the State, and factories, producing spokes and hubs, household furniture, wagons, agricultural implements, matches, and soap, as also grist-mills, saw-mills, machine shops, and iron foundries, are springing up in different parts of the State.

The Great Western Manufacturing Company at Leavenworth is largely engaged in the production of machinery and manufacture of stoves, being the most extensive establishment west of St. Louis. One hundred steam engines, the production of this company, are now in use in the West. The production of stoves this year will aggregate 10,000. Their ordinary business consumes from 15 to 18 tons of iron daily, while they give employment to 150 persons, transacting a business equivalent to \$375,000 per annum. The development of the coal mines and consequent cheapening of fuel will greatly advance the manufacturing interests of the State, and the adaptability of soil and climate to the production of the raw material will insure to Kansas greatly extended manufacturing business.

At Franklin, 16 miles southwest from Ottawa, the first velvet manufactory in the United States has just been put in operation; a colony under the superintendence of M. Valetton de Boissiere having purchased 3,200 acres of land, and at once commenced improvements thereon, putting a large tract of the land into cultivation to prepare it for groves of mulberry and other varieties of trees suitable for the sustenance of the silk-worm. Several varieties of these trees have already been set out and several thousand additional will be planted in the spring. Ample means are at hand, and some of the best practical manufacturers of France are interested in the success of the enterprise. One loom is already in operation, producing 280 yards of velvet ribbon daily. The addition of other looms is in contemplation for the increase of the supply of ribbons, and also for the manufacture of other silk fabrics. The raw material has been obtained from France, and will continue to be imported until it can be furnished from native industry. The proprietor is now erecting a large stone building for a factory, and is importing machinery from France. He also anticipates the arrival

of French artisans to manage the machinery. The parties associated in this undertaking have had large experience in the cultivation of the silk-worm and the making of fine silk goods, and, after full examination of our country, have chosen Kansas as well adapted to their purpose, and are sanguine of success.

The commercial interests of the State are comparatively undeveloped. The natural means of transportation is the Missouri River, which, through the medium of the Mississippi, opens the way to the Gulf of Mexico and the Ocean. The commerce at present is chiefly domestic, though a company is organizing for the shipment of grain in bulk on the Missouri and Mississippi Rivers, and if successful the products of the soil will find their way to the mouth of the Mississippi and thence to Europe.

The total trade of Kansas is \$114,000,000, \$30,000,000 of which is transacted in Leavenworth alone, a city not yet 15 years old. The other places of commercial importance are Lawrence, Atchison, Fort Scott, Topeka, Junction City, and Emporia.

The banking interests of the State represent a capital of \$26,800,000.

The cattle trade of Kansas is one of great importance. Large herds are annually brought from Texas to points in the western part of the State on the line of the Kansas Pacific Railroad, the trade mainly concentrating at Abeline, though Junction City, Salina, and Ellsworth have a share of the business. Last year 70,000 head were shipped east from the several points in the State.

The cattle are generally bought in herds in Texas at \$11 for beef cattle and \$6 for milch cows—younger ones at lower prices—and are held at Abeline at figures equal to 100 per cent. advance.

The means of intercommunication are rapidly growing, and there now exist over 1,200 miles of railroad, while six years ago there was not one mile.

The principal routes are the Kansas Pacific, extending from Leavenworth and Kansas City due west the entire length of the State; the Missouri, Fort Scott and Gulf Road, running from Kansas City south through the eastern tier of counties to the southern boundary of the State, in Cherokee County; and the Missouri, Kansas and Texas Road, extending from Junction City southeast through the rich valley of the Neosho by the way of Emporia and Humboldt, through the rich land ceded to the United States by the Osage Indians, to the south line of the State, in Neosho County, and being now extended from thence through the Indian Territory, with a view of reaching the Gulf of Mexico at the most eligible point for the shipment of goods. There is also the Central Branch of the Union Pacific Railroad, running 100 miles west from Atchison, through the northern counties of the State, and looking to a future extension by the way of the Republican Fork to the Transcontinental Road from Omaha to the Pacific Ocean.

The Leavenworth, Lawrence and Galveston Road has also been constructed from Lawrence south to a point at or near Garnett, in Franklin County, giving transportation to that and Douglass County. All these roads, except the Central Branch, unite with the Kansas Pacific, the main thoroughfare, and reach the principal portion of the settled parts of the State. They have all been endowed by Government with valuable land grants, and through the enterprise and energy of their projectors have been constructed as first-class roads with commendable activity.

The situation, climate, natural resources, and adaptability to all kinds of produce have been fully appreciated, and foreign immigration, as well

as that from other parts of the Union, has been unprecedented; the immense growth of the State has occurred, in a great measure, during the last ten years, as Kansas, from a population of 107,000 in 1860, has increased to upward of 360,000 in 1870, an advance of over 300 per cent. During the last year 3,298 farms, embracing 647,185 acres, have been taken for actual settlement under the beneficent provisions of the homestead act, while the total disposal of lands in the State by the Government to individuals aggregates 983,190 acres.

So rapid has been the advance of settlements that Congress, ever open to the wants of our hardy pioneers, has constituted two new districts in the State; one embracing the north half of the western land district and the lands along the valley of the Republican and Solomon Rivers, with the land office at Concordia; the other, at Augusta, embraces the trust lands of the Osage Indians, and that portion of their diminished reserve, it is presumed, at no distant period will be laid open to settlement. The other land districts are the Delaware, with the office at Topeka; the Osage, with the office at Humboldt; and the Western, with the office at Junction City.

With these facilities no State has a brighter and more prosperous future than Kansas.

There are now 41,499,082.83 acres undisposed of within the limits of the State.

NEBRASKA.

This State, covering 75,995 square miles, embracing upward of 48,786,800 acres of land, presents a field of attractive and magnificent proportions to the agriculturist.

The climate of the State is mild and healthful, with a mean temperature during the three winter months of 22°, and the summer months of 70°. The atmosphere is generally dry, although the rain-fall is immense.

The eastern parts of the State are well adapted to the cultivation of all agricultural produce. The surface is rolling prairie, and the soil of the eastern portion and south of the Platte is a rich, black vegetable mold from two to ten feet deep and even of greater depth, and is slightly impregnated with lime and entirely free from stones and gravel, easily plowed to any depth. The sub-soil is mostly yellow clay, yet not impervious to water. The wild grasses grow luxuriantly both upon the bottom and table lands, yielding from one and a half to three tons per acre, and are more nutritious and better adapted to the successful raising of sheep and horned cattle than the cultivated grasses of the Eastern States; the cultivated grasses may be raised, however, to an unlimited extent.

Thousands of cattle are being brought from Texas and fattened on these wild grasses, the meat commanding ready sale in Chicago, realizing to those engaged in this branch of industry rapid and large profits.

The soil of the State readily withstands the extremes of drought and rain to an extent not found in other agricultural regions of the country; whether the rains are excessive or drought and high temperature prevail, the crops are equally as good and the yield equal to the most favorable conditions in other States.

The woods are sparse, the limited supply of timber being a drawback to the progress of the settler; nevertheless, settlements are being rapidly made, the construction of the Union Pacific and other railroads enabling the agriculturist to obtain quickly and cheaply the article so essential to prosperity.

The want of the State in this respect is fully appreciated by the people here; the planting of young timber is one of the first objects of the settler; the protection of the young native growth from fire is guarded; as a consequence this most essential article is rapidly increasing.

The eastern and settled portion of Nebraska is well watered by rivers descending from the north, the west, and the central portion, even to the Missouri. The western part of this commonwealth is, with the exception of the two branches of the Platte River, generally wanting in running streams. Here, then, irrigation, the value of which the States of the Pacific Slope have appreciated, will be adopted. But one experiment, however, has thus far been made in this region of Nebraska. This was by the Lincoln County Ditch Company, organized in May 1870, under the State laws. The water is taken from the Platte at a point near and west of Fort Cottonwood; from thence it is carried by a ditch, six feet wide by one foot deep, in a northeast course about eight miles, and thence east four and a half miles to the North Platte. It runs on high ground between the rivers, and will irrigate all the lands on both sides to the extent of 10,000 acres. Over 250,000 cubic feet of water are conveyed by the ditch every twenty-four hours, the entire cost being less than \$800, and the expense of repair is trifling, whilst its use on the crops has been attended with the most flattering success. With slight additional expense its capacity can be largely increased.

The success of this experiment will, without doubt, direct the attention of our people to the utility and productiveness resulting from properly-directed efforts to supply the lack of moisture in the soil of this portion of the State.

The principal counties show an aggregate of 850,000 acres under cultivation, of which 285,000 acres are within Richardson County, 100,000 acres in Burt County, 60,500 acres in Platte County, and 55,500 acres in Cass County, while the others range from 3,000 to 50,000 acres. Of this cultivated field, 240,000 acres are devoted to wheat, 159,400 acres to corn, 125,000 acres to oats, 1,900 acres to rye, 36,800 acres to barley, and 103,700 acres to potatoes and other crops. The average yield per acre is, of wheat, 23 bushels; corn, 46 bushels; oats, 49 bushels; rye, 24 bushels; barley, 35 bushels; and potatoes, 186 bushels.

No efforts have yet been made in the culture of the tea plant, though an interest in the subject has become manifest, and no doubt its adaptability to the soil will be demonstrated by future experiments.

Wool-growing will, of course, become a constantly-increasing and all-important branch of industry. The yield during the last year, in ten counties, was 169,129 pounds, valued at \$46,910. Of this amount 100,000 pounds, valued at \$30,000, was clipped in Otoe County. The principal breed of sheep is the merino, and the price of the wool per pound is 30 cents. But little has been done in the culture of flax and other fibrous productions, though where these plants have been experimented with the efforts have been attended with success.

Mineral productions are confined to coal, lime and sand stone, gypsum, and a showing of iron ore, though it is claimed that gold exists in Seward County. The coal, so far as developed, exists principally in Otoe County, on the Missouri River and south of the Platte, being, without doubt, the continuation of the coal measures of Iowa and Missouri.

In Lancaster County there are inexhaustible quarries of sandstone, resembling the Seneca or Potomac stone. When quarried it is so soft as to be easily crumbled, but hardens by exposure to the air to such extent that it can with difficulty be marked with a knife. Near the head-

waters of Salt Creek are extensive quarries of blue limestone, presenting the characteristics of Trenton stone. Near Lincoln is found an inexhaustible quantity of beautiful gray magnesian limestone, nearly as hard and susceptible of fine polish as Italian marble.

Like Kansas, Nebraska possesses extensive salt basins. The principal one is situated in Lancaster County, surrounding the city of Lincoln, the capital of the State, and embracing an area of 12 by 25 miles.

These springs contain by weight 29 per cent. of salt. The absence of fuel for evaporating purposes would, however, be a serious drawback to the development of this region were it not for the excessive dryness of the atmosphere and consequent rapid evaporation, which more than compensates for this loss. The average evaporation, during the summer months, is ten inches of saturated brine in sixty hours.

In the manufacture of salt by solar evaporation vats are prepared, 16 feet square and 8 inches deep; in these are placed the brine, exposed to the sun's rays and the atmosphere; covers are provided in wet weather, to prevent dilution with rain.

The annual yield of one of these vats is 5,742 bushels, or 1,148 barrels, of salt; and as one well will usually supply 1,000 of these vats, we have, after deduction of loss, not less than 882,000 barrels as its product; at an estimated gross value of \$3 per barrel, this will amount to \$2,646,000 as the product of one well for a year; while the net value may be placed at not less than \$2 per barrel, making a profit of \$1,764,000.

The facilities for manufactures, owing to the limited supply of fuel, are restricted to the streams and water-courses. Consequently, outside of the cities bordering on the rivers, manufacturing is inconsiderable.

In Omaha will, of course, be found the principal manufacturing establishments; this branch of business is, however, yet in its infancy, and not sufficiently developed to give an adequate idea of what the resources of the State are capable in this direction.

The commerce of Nebraska is, of course, mostly domestic, but little produce being shipped from the State, the constant influx of immigration and increase and consumption of produce requiring the retention at home of the products of the State.

The facilities of commercial intercourse are constantly increasing, railroads being rapidly pushed forward in the direction of settlements, and, in the case of the Union Pacific road, far beyond that point.

The Burlington and Missouri River Road has been constructed, in the counties of Cass and Lancaster, from Plattsmouth to Lincoln, a distance of 55 miles, at an average cost per mile, including buildings and rolling stock, of \$30,000. The station-houses are valued at from \$500 to \$3,000, while the shops at Plattsmouth are valued at \$40,000. The company have seven locomotives and 125 freight cars, valued at \$132,500. When completed, the road will connect with the Union Pacific Railroad at Fort Kearny.

The Omaha and Northwestern Railroad is to run from Omaha to Niobrara River, via Fort Calhoun, De Soto, Blair, Cuming City, and West Point; thence up the Elk Horn and North Fork to Branzais Creek, and then down to the Missouri River, at the mouth of the Niobrara, an entire distance of 183 miles. Ten miles of this road have been constructed, at a cost of \$18,000 per mile; there are 15½ miles additional under contract, and \$200,000 has already been expended on the work. No trains are yet running on this road.

The Burlington and Southwestern Railway, starting from Rulo, in the extreme southeastern corner of the State, it is contemplated, will run from thence west, via Pawnee City, to Beatrice; thence south-

west to a point in Nuckolls County, at or near where the Republican River enters Kansas, and thence to Sheridan, or some point on the Kansas Pacific Railway. Its advantages to Nebraska are the means of communication it gives to the counties of Richardson, Pawnee, Gage, Jones, Jefferson, and Nuckolls. Eleven miles of the road have been built at a cost of \$17,500 per mile; from this point to Pawnee City is now under contract, and being vigorously prosecuted. The Midland Pacific Railway runs from Nebraska City to Lincoln, and is now graded 57 miles, with 12 miles finished, at a cost of \$18,000 per mile.

It will thus be seen that the enterprise of the people is equal to the demands of the age, and that the value and utility of railways as means of intercommunication are fully comprehended by the community. Capitalists, too, see in the future the value of the yet undeveloped resources of the State, and invest their money, confident of an ultimate profitable interest.

The value of real estate and personal property, in nineteen leading counties, is \$34,244,000; value of raw material produced, \$1,318,500, to which is added by manufacture, \$392,808.

There are many enterprising cities within the State, such as Omaha, destined to be a great commercial capital, Nebraska City, Plattsmouth, Lincoln, Rulo, Beatrice, Dakota City, Fremont, Columbus, with others of minor note.

Omaha, as the eastern terminus of the Union Pacific Railway, is pre-eminently the leading city of Nebraska, and is growing in wealth and population with extraordinary rapidity.

Lincoln, the capital, was created under the legislative act of June 14, 1867, making provision for locating the seat of government and public buildings. Commissioners selected the site of the village of Lancaster, in Lancaster County, situated on an elevated surface in the midst of an agricultural and thrifty population, with rock, timber, and water-power within two miles, and equidistant from Kansas and the towns of Pawnee City, Nebraska City, Plattsmouth, Omaha, Fremont, and Columbus. The streets are 120 feet wide, and twelve acres each have been reserved for the capitol, State university, and a city park. Other reservations are made for a county court-house, for a city hall and market space, for a State historical and library association, and seven sites for public schools. Desirable reservations are also set apart for ten religious denominations, upon which to erect houses of worship. One also for the order of Odd Fellows, and one for the Masonic fraternity.

At the several sales of lots held within the year ensuing, \$75,580 were realized. The capitol is built of red sandstone, and faced with the magnesian limestone of Beatrice. The building is designed after the Roman Italian style of architecture, is 120 feet in height to the top of the main tower, covering an area of 175 feet in length by 100 feet in breadth, making 175,000 square feet, and costing in the aggregate \$500,000.

The hall of representatives and senate chamber are on the second floor, and are 30 feet in height, while other public offices are arranged with a view to comfort and convenience. On the wings of the building are constructed four fire-proof towers, 70 feet in height, divided into apartments for the safe-keeping of the State archives, public documents, and statutes. The building is situated at the summit of a slight eminence on the east side of the town site, of which it commands a full view.

The State university is of a modern style of architecture, in the form

of a Greek cross, ornamented with tower and mansard roof; its extreme length is 156 feet, and height to the top of the tower, 112 feet; the basement, of brown sandstone, faced with rock-work finish, presents an elegant and durable appearance. The superstructure is of brick, while the approaches, steps, and landings are of hard white limestone.

The university is also of modern style, is endowed with 146,000 acres of land, and an annual fund which for this year amounts to 60,000 dollars. The lunatic asylum is also of modern architecture, with tower and mansard roof.

Nearly every branch of business is represented in the industry of the town, and three well-conducted newspapers are published in the place, daily, weekly, and monthly. There are ready employment, good wages for mechanics and others, and excellent opportunities for the profitable investment of capital.

There have been disposed of in the State during the last fiscal year, for actual settlement and at private entry, 1,276,575 acres of land; of this 456,439 acres have been taken under the homestead law, adding to the productive interests of the State 3,382 farms. There is still left for settlement an area of the surveys along the line of the Union Pacific Railroad and elsewhere in the State, which opens an attractive field to the immigrant.

TERRITORIES TRAVERSED BY THE ROCKY MOUNTAIN RANGES.

NEW MEXICO.

This Territory was organized under the act of Congress approved September 9, 1850, the country covered by its limits having formerly constituted the Mexican province of New Mexico, a part of Upper California, and a part of the State of Texas. It is bounded on the north by Colorado, on the west by Arizona, on the south by Mexico and Texas, and on the east by Texas and Indian Territory; extending from 103° to 109° west longitude from Greenwich, and from $31^{\circ} 21'$ to 37° north latitude, or an average of 352 miles from north to south, and 332 miles from east to west; the portion formerly comprising parts of the provinces of the Mexican Republic, chiefly acquired by the United States under the treaty of Guadalupe Hidalgo; the State of Texas having assented to the subtraction of the remaining portion from her territory by acceptance of the provisions of the before-mentioned act of September 9, 1850, which act reduced her boundaries and provided for ample remuneration for the lands subtracted. The area of the Territory is 121,201 square miles, or 77,568,640 acres.

The general face of the country is constituted of high level plateaus, traversed by ranges of mountains, from which occasional isolated peaks rise to a great height, and intersected by rapid streams of water flowing through beautiful fertile valleys and channeling in the rock precipitous cañons. The general course of the mountains, valleys, and streams is from north to south, with the tendency to a deflection from northwest to southeast, or toward Mexico and the Isthmus of Panama, the territory including the southern extension of the mountains constituting what is called in more northern latitudes the Great Rocky Range, this being an elevated continental vertebral column, extending from the Arctic Ocean to South America without losing its identity or the chain of connecting peaks being broken, and following a line parallel with the general contour of the Pacific coast throughout its whole extent. The

rivers of the Territory form parts of the water systems of both the Atlantic and Pacific slopes; those on the eastern side of the dividing range emptying into the Gulf of Mexico by way of the Canadian and Mississippi Rivers and the Rio Grande del Norte, and those on the west flowing into the Gulf of California by way of the Gila and Colorado Rivers.

The principal river of New Mexico is the Rio Grande del Norte, which flows from north to south entirely through this Territory and nearly in its center, entering from Colorado near the 106th degree of west longitude from Greenwich, and leaving at about $106^{\circ} 30'$ to form the boundary between Mexico and Texas, its main affluents in the Territory being the Puerco and Chama Rivers. The Pecos River, which empties into the Rio Grande near its mouth, waters the southeastern portion of New Mexico, having numerous considerable affluents, as the Rio Hondo, Rio Callines, and Rio Penasco. The Canadian and its tributaries, the Rio Mora, Beaver Creek, Bajarita Creek, and Rio Ocate, constitute the water system of the northeastern portion of the Territory; the Rio San Juan, a tributary of the Colorado, flows through the northwestern part, collecting the waters of numerous minor streams; and the Gila and San Domingo are found in the southwestern part.

The valley of the Rio Grande is bordered on the east by the Jumanes, Del Cabello, and other minor ranges of the Rocky Mountain chain, and on the west by the Sierra Madre, the sections of the Territory east of these principal ranges being traversed by the Guadalupe, Sacramento, and Organ Mountains, and the Sierras Blanca, Hueca, and other divisions forming the western boundary of the Pecos Valley; while on the west of the Sierra Madre is a series of detached ranges bordering valleys possessing great fertility of soil, and known to embrace great wealth of mineral deposits, although almost entirely undeveloped, this section having been as yet but very imperfectly explored. One of the most noted elevations of this magnificent mountain country is Mount Taylor, situated northwest from Santa Fé, in the Sierra Madre range, rising to a height of 10,000 feet above the valley of the Rio Grande, this valley having itself an elevation of between 5,000 and 6,000 feet above the level of the sea in its northern extension toward the Colorado boundary, 4,800 at Albuquerque, in latitude 35° , and 3,000 at El Paso, in the Mexican State of Chihuahua, near the southern boundary of New Mexico. The general altitude of the mountain chains rising on each side of the valleys of the Rio Grande and Pecos Rivers is between 6,000 and 8,000 feet, and sometimes, especially in the northern sections of the Territory, they reach to the height of 10,000 and 12,000 feet above the level of the sea, and into the regions of perpetual snow, their slopes in the summer season presenting almost unbounded varieties of vegetation, changing as ascent is made from the succulent and luxuriant fruits of southern skies, through the gradations of the semi-tropic and temperate flora to the scanty herbage and dwarfed timber of the frigid zone, while the wide-stretching fields of snow and ice, capping with white the lesser heights, which vary in color from bright green in the immediate vicinity of the observer to deep blue in the distance, furnish a never-failing supply of the purest water to the many streams coursing down the mountain sides, and uniting in considerable rivers in the valleys beneath, supplying the means of irrigation and other demands of agricultural and domestic economy. The portion of the Territory adjoining the western boundary is principally constituted of elevated table-lands, or mesas, as they are called by the Mexican inhabitants, traversed by chains of mountains and diversified with broad valleys, in many of which are considerable streams, having their margins

fringed with cottonwood and other timber, and bordered with luxuriant meadows, the principal of the rivers of this section being the Gila and Rio San Juan, tributaries of the Colorado of the West. Owing to the mountainous character of the surface of New Mexico, its streams are generally rapid and shallow, and therefore unnavigable, except for light-draught canoes and flat-boats; but their rapidity gives them great water-power, rendering them especially adapted to the purposes of manufacturing, and their considerable fall lessens the labor consequent upon the necessity of employing their waters during the dry months of early summer in irrigation of the growing crops of the agriculturist, and also to supply the watering-places of cattle and sheep, and meet the requirements of the rancherias or farm-houses.

The climate of New Mexico is considerably varied by the changes of latitude and by the elevation of the surface of the country, the winters in the northern part, the surface of which is generally of great altitude above the sea-level, being long and severe, although not subject to the sudden changes of temperature frequently occurring in more humid climates. The thermometer in this section ranges from 10° to 75° F. above zero, while in the southern part of the Territory the temperature is mild, seldom falling below the freezing point, although very rarely reaching the opposite extreme of excessive heat, as the low latitude is balanced by considerable elevation of the surface, securing clear skies, a dry atmosphere, cool nights, and refreshing breezes. The salubrity of the climate of this portion of our undeveloped territory is remarkable, and constitutes one of its most attractive features; the malarious maladies occasional in some localities of the Mississippi Valley, and elsewhere where the soil is imperfectly cultivated and surplus vegetation allowed to decay on the surface, being entirely unknown in New Mexico, and seldom are persons here affected with pulmonary or hepatic diseases, while the presence of numerous mineral springs, thermal and otherwise, possessing extraordinary curative powers, promises to render it, as soon as their virtues shall have become as well known to the public as now to the explorer and pioneer, one of the most popular places of resort by those residents of our cities and towns whose physical health is impaired and who seek recuperation, and the beauty of its natural scenery must attract many who desire relief for minds overtaxed with the care and labor of arduous professions or engrossing mercantile pursuits.

The plateaus, valleys, and hill-sides of this Territory are usually covered with various indigenous grasses, furnishing the best of pasturage for sheep and cattle, the most valuable and widely distributed of these grasses being a variety called mesquite or gama-grass, which grows during the rainy season of July and August, ripens under the influence of autumnal suns, and dries upon the stalk, bearing a copious abundance of nutritious seeds, and constituting adequate support for every kind of live stock throughout the entire winter, and until the more rapidly growing herbage of the spring and early summer has attained sufficient growth to attract the animals, by its freshness, from their winter sustenance and furnish the change of food necessary to the most perfect development of animal life. The herdsman and shepherd in this country therefore possess great advantages over the farmer and stock-raiser of the more eastern States, as the latter is compelled to expend a large portion of his time and labor in summer in providing food for the support of his stock during the winter months; besides this advantage there is to be considered the fact that the mildness of the winters and the slight falls of snow render shelter other than that afforded by the

valleys and timber entirely unnecessary for the protection of the herds and flocks, the pure air, wide ranges, and excellent food resulting in an extraordinary healthiness of the animals, among whom the contagious diseases prevalent in other sections are almost entirely unknown, the horses being remarkable for their endurance, and the beef and mutton celebrated for their excellence, while the flesh of the cattle and sheep is readily cured without the use of salt by being hung up in the open air, the rarity of the atmosphere soon producing a state of dryness, which will preserve it in all its natural sweetness and excellence for any reasonable period. The production of wool is at present one of the most profitable branches of industry in the Territory, and the recent introduction of the improved breeds of sheep, with the view of obtaining larger animals and finer qualities of the fleece, will undoubtedly contribute greatly to the advancement of this interest.

There are, certain portions of New Mexico perhaps, unfit for either cultivation or pasture, but it is certain that almost all the valleys of the rivers, as well as the table lands within the reach of irrigation, are exceedingly productive, the soil possessing elements of great fertility, and the occasional scarcity of water alone preventing the more arid portions from producing excellent crops and superior indigenous herbage. The most abundant crops of the Territory are those of Indian corn, wheat, barley, oats, apples, peaches, melons, apricots, and grapes, all of these grains and fruits thriving readily, and the crops being of excellent quality. The soil, climate, and nature of the surface are especially adapted to the culture of the grape, this being an important branch of the husbandry of the country, the yield of fruit being prolific and the wine produced therefrom of excellent quality. Consequent upon the necessity of irrigation, cultivation of the soil is confined to those localities where water from the rivers and streams can be readily obtained, the usual method of securing the necessary supplies being by constructing large canals, called *acequias madres*, of sufficient capacity for an entire town or settlement, at the cost of all who desire the benefits to be derived therefrom, along the most elevated portions of the valleys or over the greater elevations of the plateaus, adjoining the foot-hills of the mountains, and from this main ditch each farmer constructs his own minor canal to the lands he desires to irrigate, the right of each to the use of the water being confined to certain hours in each week, in order that the supply may be fairly divided, a farmer being able, by the use of these ditches, to thoroughly water about five acres in a day on even ground. The necessity for irrigation is certainly the source of considerable trouble and labor to the agriculturist, but the certainty and excellence of the crops which result from this care, and the comparative freedom from dependence upon the seasons, almost atone for this necessity; but it is gathered from well-tried experiments that when more attention has been given in this section to the planting of fruit and forest trees the climate will be materially changed in this respect, greater supplies of rain following, and its fall being more evenly distributed through the several seasons.

The principal forests of New Mexico are confined to the mountain ranges, being constituted chiefly of pine, cedar, spruce, and other varieties of evergreens; but on the foot-hills extensive tracts of piñon and cedar are found, and in the river bottoms, fringing the margin of the streams, are belts of cottonwood, sycamore, and other deciduous trees, while in the southern parts of the Territory groves of oak and walnut are abundant.

The mining interests of New Mexico are important, and promise to

constitute in the immediate future one of the chief sources of wealth and prosperity for this Territory, embracing valuable and extensive deposits of gold, silver, copper, iron, and coal. Embarrassments, proceeding from Indian difficulties and from the want of ready means of transportation for supplies and products, have greatly retarded the development of the mines in the past; but recently the country has become more settled and safe, in consequence of the present beneficent Indian policy of the Government and the efficient administration of the same, the result being new discoveries of valuable mines and more profitable working of the older ones, the yield of gold and silver during the past year comparing very favorably with that of any of the past years in the history of this interest, notwithstanding the suspension of work on some of the principal mines for the purpose of introducing new and improved machinery with the view to their more economical working. The great desideratum in connection with the mining interest is better and cheaper modes of transportation, which can only be furnished by the construction of railroads, and when these shall have been extended through the Territory, as they inevitably soon must be in the light of American progress, the mines of New Mexico will undoubtedly contribute greatly to the augmentation of the present annual product of the precious metals in the United States. The most advanced developments of the gold and silver mines are in the regions called the Old and New Placers, Pinos Altos, Cimmaron Mining District, Arroyo Hondo, Manzano, and in the Organ Mountains, Sierras Blanca, Carriza, and Jicarrilla, and the Mogollon and Magdalena Mountains. The region called the Old and New Placers is situated in Santa Fé and Bernalillo Counties, extending over about 200 square miles of territory, a large portion of which is claimed under the Cañon del Agua, Ortiz, and San Pedro grants; the principal mines in this district being the Ortiz, Ramirez, Mammoth, and Candelaria. A canal, 60 miles in length, from the Pecos River to these mines, is projected, with a fair prospect of its early construction. This canal will furnish sure and adequate supplies of water for the working of the mines throughout the entire year, and greatly assist in their perfect development, besides providing for the various requirements of the settlements, and assist in the furtherance of the agriculture of this section.

At the Placer de Dolores the New Mexico Mining Company were until recently running a forty-stamp mill, obtaining the ore from the Ortiz mine, but have now suspended operations with the view of extending them both in the mining and milling departments. At the Placer de San Francisco a ten-stamp mill is running on gold ore obtained from the Santa Candelaria lode, producing \$35 per ton. The Pinos Altos mining district, in Grant County, embraces 200 square miles, and contains mines of gold, silver and copper, the principal of the gold mines being the Pacific, Arizona, Atlantic, Langston, and Aztec, and the chief copper mine the Santa Rita. From \$20 to \$30 per ton are obtained from the silver ores of this district, while the gold ore occurs in veins which vary from a few inches to four feet in width, possessing great wealth of the precious metal, \$50 to the pound of ore having been obtained from thirty pounds taken from the Langston mine.

The copper mines are situated in a belt of feldspathic rock about two miles in width and twenty miles in length; the Santa Rita mine, producing about 3,000 pounds of copper per week, being the only one at present in operation. The Stephenson mine, in the Organ Mountains, yields

ore containing 80 per cent. of lead, besides \$50 of silver to the ton. From the Maxwell lode, situated in the Cimmaron district, as high as \$15,000 dollars in a week have been obtained, the ore from this lode yielding never less than \$30 per ton. This district embraces 400 square miles, and the several mines therein are supplied with the water requisite for their proper working by an artificial sluice, 37 miles in length. Valuable mines of gold, silver, and copper exist in the Manzano Mountains, the most important of these as yet developed being the Carson lode, which yields from \$60 to \$1,200 in gold per ton. The yield of the mines in the Moreno district has been greatly increased of late by an extension of the canal which furnishes the water for their working to new sources of supply, the Astec mine in this district being one of the most productive in the Territory, there having been obtained by the company owning and working it from 1,000 tons of the rock crushed between the dates of January 21 and April 30, 1870, \$75,760 in gold, with a profit above the cost of mining and milling of \$62,000. New discoveries of valuable mines are constantly occurring in almost every section of New Mexico, the most recent and remarkable of which are the silver mines at the Cienega, near Fort Bayard; at Ralston, in the Pyramid Mountains, in latitude $32^{\circ} 19' 35''$, longitude $108^{\circ} 44'$ west; and others further north, on the Gila River. Rich lodes of gold and silver have also been recently discovered in the northeastern and northwestern parts of the Territory.

The extension of the lines of public surveys during the past year has been confined to standard, exterior, and subdivision lines in the valley of the Pecos River, north of Bosque Redondo Indian reservation, there being so great a demand for surveys in this section that much of the surveyed land is reported to have been taken up for actual settlement and cultivation. The appropriation of \$5,000, per act of March 3, 1869, and the unexpended balances of former appropriations were covered by these surveys. Of the appropriation of \$10,000 for surveying the public lands in New Mexico, per act of July 15, 1870, \$5,000 have been covered by a contract for exterior lines in the region of the newly discovered mines in the southwestern part, in the vicinity of the Rio San Domingo and Rio Mimbres, there being a great demand for surveys in this section. The urgent call for subdivisinal surveys in various portions of the Territory has induced the surveyor general to retain the remaining available \$5,000 for this purpose until it shall have been determined where the necessity therefor is the greatest.

The first public sale of the public lands of New Mexico took place at Santa Fé, commencing August 7, 1870, in accordance with the proclamation of the President dated May 13, 1870; the larger portion of the surveyed lands adapted to agriculture or grazing having been then disposed of. During the past year two valuable mines have been surveyed, under special deposits made for the purpose, in accordance with the provisions of the third section of the act of July 26, 1866; these mines being the Santa Rita del Cobre and the San Augustin. No additional private land claims have been surveyed during the year, the number remaining the same as at the close of 1869, being 14 Mexican grants and 16 Indian pueblos.

The great desideratum of the land interests of New Mexico, and the most important requisite for the protection and welfare of the actual settlers and cultivators of the soil, seems to be the final determination of all claims to lands arising from Mexican grants in view of the provisions of the treaty of Guadalupe Hidalgo and general principles of international law, and the final adjustment of the locus and bounds of

all confirmed claims. In order to facilitate the survey of these confirmed claims it is respectfully recommended that legislation be had looking to the declaration by Congress of the maximum quantity of land to which a claimant may be entitled by virtue of a grant under the laws of Mexico, particularly the colonization law of 1824, under which the majority of these grants were made, and the confirmation of such grant by act of Congress or any tribunal vested with the power of confirmation by legislative enactment. Some of the grants are claimed to extend over vast areas, the boundaries usually being natural objects, as rivers, mountains, or valleys, or the lines of adjoining proprietors, while the terms of the colonization law, and indeed the general policy of Mexican laws and ordinances governing these grants, limit the granting power of the authorities conferring them to eleven square leagues, or 48,825.48 acres, to each grantee; evidently a sufficiently large extent for any agriculturist or herdsman, however wealthy or ambitious. Many of these extensive claims have never been presented for confirmation, yet they operate against the settlement of the country, the settlers fearing to jeopardize title to their improvements in the event of the confirmation of the Spanish or Mexican claim embracing such improvements. The surveyor general, in his report herewith for the year ending June 30, 1870, states that quite recently there had been filed in his office documents purporting to constitute a grant made in 1832, covering an immense region east of the Rio Grande, in New Mexico, with portions of Texas and Colorado. In order to obviate this impediment to the improvement of the country it is recommended that an act be passed by Congress, prescribing a mode for the final adjustment of these claims and a stated time within which they should be presented, in default of such presentation all said claims to be declared forever barred from recognition by the Government. In this connection, attention is also respectfully invited to the recommendation in the reports of this office for the years 1867 and 1869, in regard to the adjudication of private land claims in the extreme southern portions of New Mexico and Arizona, within the limits of what is known as the "Gadsden purchase," acquired from the Mexican government by the treaty concluded at the city of Mexico in the year 1853.

There have now been surveyed in New Mexico 4,240,859 acres, and there remain unsurveyed 73,327,781 acres. The area of public lands in the Territory undisposed of is 70,704,558 acres.

ARIZONA.

This Territory was organized under the provisions of the act of Congress approved February 24, 1863, having been included within the limit of New Mexico prior to the passage of that act. Its boundaries are Nevada and Utah on the north, New Mexico on the east, California and Nevada on the west, and the republic of Mexico on the south; its territory extending from 109° to $114^{\circ} 45'$ west longitude from Greenwich, and from $31^{\circ} 37'$ to 37° north latitude, embracing an area of 113,916 square miles, or 72,906,240 acres, being nearly three times as large as the State of New York, and larger than the united areas of New York, Pennsylvania, New Jersey, and Maryland.

The general surface of Arizona possesses considerable elevation above sea level, consisting of wide plateaus, occasionally crossed by ranges of high mountains, and diversified by towering isolated peaks, reaching an altitude of thousands of feet above the plains, while both plateaus and mountain ranges are intersected with numerous streams

of considerable size, sometimes running in deep cañons, and at other sections of their course debouching into broad and fertile valleys, where they are generally skirted by a luxuriant growth of oak, fir, ash, and cottonwood timber, or bordered by magnificent meadows stretching back on each side to the foothills of neighboring mountains or the rise of the plateau.

The principal river of this Territory is the Colorado of the West, formed in Utah by the union of the Green and Grand Rivers, and flowing in southwest and northwest directions through the northwest corner of Arizona until it strikes the Nevada boundary, where, after pursuing a northwesterly course for about 35 miles further, it turns nearly due south and continues in this direction until it empties into the Gulf of California, constituting the great part of the western boundary of Arizona, separating it from Nevada, California, and the Mexican province of Lower California. The bed of the Colorado, within the limits of Arizona, lies at the bottom of the celebrated Grand Cañon, which is a stupendous fissure over 400 miles in length, with vertical walls rising from 500 to 1,500 feet above the surface of the stream, and exterior banks from 2,500 to 4,000 feet above the river bed; the geological formation of the walls being principally of limestone and sandstone, with occasional sections of granite and others of extremely beautiful marble. Reports of recent explorations of this cañon describe the river throughout its extent as being rapid, turbulent, and attended with dangerous eddies and occasional falls, while the difficulties and dangers of its exploration are further increased by more than two hundred minor streams precipitating themselves over its banks, forming an endless variety of cascades and waterfalls, and producing violent disturbance of the stream below. The Black Cañon of the Colorado is located on the section of the river between Arizona and Nevada, and possesses features similar to those of the Grand Cañon, although inferior in both length and depth, and the river therein being comparatively smooth and readily traversed. Below Callville, in Nevada, the Colorado is susceptible of navigation by light-draught steamers, although somewhat disturbed in places by shifting sand-bars, being used for the portage of heavy freight from the Gulf of California to Southern Nevada and Utah, there being excellent wagon roads from Callville to different points of prominence in those political divisions.

The other rivers of Arizona are affluents of the Colorado of the West, being the Little Colorado, Gila, Bill Williams' Fork, and several minor branches of these streams, as the Rio Verde or San Francisco, Rio San Pedro, Rio Santa Domingo, Rio de la Santa Cruz, Rio Puerco, Rio Salinas or Salt River, and Zuñi River. The Little Colorado rises in the White Mountains of the eastern portion of the Territory, near the thirty-fourth parallel of latitude, flowing northwestwardly 400 miles, receiving the waters of the Zuñi and Puerco Rivers, besides numerous smaller streams. The Gila rises in the mountains of New Mexico, and pursues a general westerly direction for 450 miles to its junction with the Colorado, having for affluents the Rio Natroso, Rio Prieto, Rio Salinas, Rio Bonito, Rio San Carlos, Rio San Pedro, and several other considerable rivers. Bill Williams' Fork of the Colorado takes its rise in the Aquarius Mountains of the northwestern section of the Territory, flows south to the point of its union with the Santa Marie, whence it pursues a westerly direction, receiving in its course the waters of several tributaries. None of these rivers is of much value for purposes of navigation, their importance to the country depending upon the demand for the waters for irrigation and mining, and their adapta-

bility to these purposes on account of their great rapidity and the numerous rapids and falls throughout their several courses; these being features which would also especially adapt them to the requirements of manufactures, and will, probably, in the future, give them great value in view of this circumstance, although at present the manufacturing interests of the Territory are unimportant.

The mountain ranges of Arizona traverse the country, in a general direction, from northeast to southwest; the principal ranges being the Pinaleno and Santa Catarina in the southeastern section; the Mogollon in the eastern part, between the Little Colorado and Gila Rivers; the Sierra del Carizo and San Francisco Mountains in the northern portion; and the Castle Dome Mountains in the southwestern portion of the Territory, near the junction of the Gila and Colorado Rivers, the geological formation of these mountains being principally granitic, although in several localities there are indications of other formations, as those of gneiss, talcose, micaceous and clay slates; and as the soil of the valleys and plateaus between the ranges consists principally of deposits of detritus of these rocks, it is presumed that they underlie the whole surface of the country, extending from range to range, where their outcroppings are visible on the surface. Metamorphic limestone is frequently found in the neighborhood of the Gulf of California, generally accompanied by the slates before mentioned, sometimes forming distinct ridges, and at other times resting on the sides of the higher granite hills; while adjoining the boundary line, in the southwestern part of the Territory, is a distinct volcanic formation, the earth being chasmed by violent eruptions, pitted by extinct craters, and intersected by immense streams of lava crossing both hills and plains.

Extensive tracts of land, particularly adapted to agriculture, with ready means for irrigating the growing crops in the dry months of early summer, are found in all of the valleys of the rivers of Arizona, the great demand for products of the soil in this section, in view of the extensive mining interests, creating local markets, in which such prices can be readily obtained for grains, fruits and vegetables as will amply repay the additional expense of irrigation; while, by the aid of this stimulus to the deep and fertile soil, the vegetation is astonishingly rapid in its growth and the crops almost certainly sure and abundant. Several sections of the valley of the Colorado are especially favorable for the culture of the ordinary cereals and vegetables, as well as the finer fruits of the temperate, semi-tropic, or tropic zones, as different latitudes are reached, the soil possessing elements of the greatest fertility, resulting from a favorable combination of organic and inorganic principles, deposited in a great measure by the waters of the river in periods of overflow, such overflow occurring annually to a greater or less depth and extent, as in the case of the Egyptian Nile, frequently rising as high as from twenty to fifty feet above the ordinary level of the river, enriching the soil and affording facilities for irrigation, by the aid of reservoirs and canals, unsurpassed in any section of the continent. Wheat and other cereals, all the ordinary vegetables of the field and garden, rice, sugar, and cotton, are some of the products of this valley. Large tracts of land on both sides of the Colorado, now considered entirely inarable, are susceptible of reclamation and transformation into the most productive farms by the construction of the requisite reservoirs and irrigating canals, it being estimated that at least six millions of acres, possessing the greatest fertility, might in this manner be added to the productive area of the national domain.

The valley of the San Pedro River, in the southeastern portion of the

Territory, embraces some of the best agricultural land south of the Gila, extending in length more than one hundred miles, and having great fertility of soil, especially in the sections near the point of junction of the San Pedro with the Gila and at the mouth of the Arivypa, while an abundant supply of ash, oak, pine, and cottonwood timber is found in this valley and on the adjoining mountains, and the finest grazing lands extend over the neighboring plateaus. The valley of the Lonoita, which river empties into the Santa Cruz near Calabazas, is a delightful region, about fifty miles in length and a mile in width, with lofty hills towering above it on either side, the soil being very fertile and particularly adapted to the culture of cereals and vegetables; the American farmers occupying this valley frequently producing two crops of these products in one year from the same land. The valley of the Rio Verde possesses much rich agricultural land as well as a luxuriant growth of oak and fir timber. The extensive Aztec ruins abounding in this section show it to have been formerly occupied by a large population, possessing industrious habits and an advanced civilization; their abandonment of the country having been caused by frequent attacks of marauding Apache Indians.

The climate of Arizona is eminently salubrious and delightful throughout the entire year, excepting, perhaps, in the vicinities of the Lower Colorado and the Gila, in the neighborhood of its junction with the Colorado, the heat sometimes being excessive in midsummer in these localities. In the northern and eastern sections of the Territory, however, extreme degrees of heat in the daytime are very rare, while the nights are invariably cool and refreshing, yet frosts are seldom, and the falls of snow of infrequent occurrence, the snow never remaining on the ground more than a few days. The rain-fall principally occurs in the rainy season of June, July, August, and September, the requisite supplies of water during the rest of the year being mainly drawn from the many streams fed by never-failing springs and the melting of snow and ice in the mountains; the excellent water system constituted by these streams presenting ready means of irrigating all the lower lands and rendering them abundantly productive, as well as of obtaining excellent water in sufficient quantities for all requirements of domestic economy and of the flocks and herds.

Many deserted haciendas and piles of magnificent ruins are found in various sections of Arizona, showing this political division to have been the scene of busy civilized life, the home of the prosperous agriculturist and herdsman, of the proprietor of extensive vineyards and wine manufactories, as well as of the successful miner, before the peaceful Aztec race yielded possession of the soil to the warlike Apache, the principal of these ruins being what are known as the Casa Blanca and Casa Grande, in the vicinity of the Gila and Santa Cruz Rivers. Since the American occupation, however, there has been a large immigration of peaceful and industrious Mexican herdsman and agriculturists, while the considerable influx of hardy American pioneers, miners, farmers, fruit-growers, and herdsman, as well as the protection afforded by United States troops, has served to repress the savage conquerors of the country and do much toward its recovery to its former prosperity, the sections most extensively populated by Americans, as well as Mexicans, being the central portion, the valleys of the Santa Cruz and its tributaries, the Lower Gila, and the vicinities of the several gold mines.

Of the several Indian tribes of this Territory, the Apaches are hostile to the whites, and the Maricopas, Papagos, Yumas, and Pimas are friendly, the latter tribe being a brave and hospitable race, living in

villages and producing large crops of wheat, corn, pumpkins, melons, and beans, with the aid of irrigation; large quantities of the produce of their farms and gardens being annually disposed of to the white settlers and the United States commissaries.

The mineral wealth of Arizona is undoubtedly as great as that of any political division of our country in proportion to its size, embracing deposits of gold, silver, platinum, copper, lead, iron, tin, nickel, cinzabar, coal, and iron, some of the mines of the more precious metals evidently having been worked with success for hundreds of years with but very inferior means for their development, while the richest accumulations of the ore in the older mines are apparently yet to be uncovered, and the probability exists that lodes more profitable than any yet found by Americans or Mexicans are to be found in the regions remaining undeveloped and almost unexplored, on account of the hostility of the Apaches. The most important mine as yet developed in the Territory is the Heintzelman, or Cerro Colorado, situated 24 miles west of Tubee; a selected quality of ore from this mine having yielded \$1,000 of silver per ton, 60 tons of inferior ore producing \$24,000 in silver. The Mowry mine, formerly called the Patagonia, in the vicinity of the beautiful Lanoita Valley and the Rio de la Santa Cruz, within ten miles of the southern boundary of the Territory, is situated at an elevation of more than 6,000 feet above sea-level, containing argentiferous galena impregnated with arsenic, easily reduced by smelting, producing an average of \$60 per ton, and sometimes as high as \$350 to the ton of selected ore. Other productive mines are the Santa Rita, Salero, Caluabi, San Pedro, and numerous others, some of recent discovery and some well known, but for many years abandoned, on account of Indian difficulties. The present determined policy of the general and local governments toward depredatory Indians, however, has recently done much to assist the mining interests and aid the reoccupation of long-deserted mines; so that the prospects of the Territory in this connection are brighter now than ever before since it became a part of our domain, and so soon as the completion of either or all of the projected interoceanic lines of railway across its limits shall furnish the requisite transportation for its full development, its Indian question will probably be no longer troublesome, and this young and remote political division rapidly advance to the important position in the Union warranted by its many sources of immense wealth.

The capital of Arizona is Tucson, situated in the valley of Santa Cruz River, on the road from Fort Yuma to the Rio Grande, in the heart of an excellent agricultural country and with rich mines in the immediate vicinity. Other important towns are Prescott, situated 140 miles east of the Colorado, in the midst of a rich and extensive mining region; La Paz, a mining town on the Colorado, 150 miles above the Gila, having considerable trade, the river being navigable both above and below this point by light-draught steamers; Arizona City, Wickenburg, Phoenix, Florence, and Tubec.

The act of Congress authorizing the organization of the Territory of Arizona made it a separate surveying district; but it was afterward attached to the district of New Mexico by act of July 2, 1864, to that of California by act of March 2, 1867, and has since been detached and again made a separate district by act of July 11, 1870. The point of junction of Salt River, or Rio Salinas, with the Gila was adopted as the initial point for public surveys in the Territory, this point being intersected by the base line and meridian governing the extension of all other lines. Contracts were entered into by deputy surveyors with the

surveyor general of California, while this was part of his district, for the extension of standard and exterior lines and the subdivision of several townships on the Gila River, near the initial point, and south and east of the Pima reservation, all of which surveys have been returned as closing the contracts; but no returns have yet been received under a contract subsequently made by the same surveyor general for the extension of the lines of public surveys south and east of the present surveyed district in the direction of the city of Tucson, nor has there been any contracts forwarded for approval by the surveyor general appointed under authority of the before-mentioned act of July 11, 1870.

There has now been surveyed in Arizona an aggregate of 1,761,783 acres, the area remaining unsurveyed being computed at 71,144,521 acres, and the area of public lands still to be disposed of by the Government at 68,855,890 acres. All applications to enter the public lands within this Territory, under the laws of Congress providing for the disposal of the same, should be addressed to the United States land office at Prescott.

COLORADO,

which has Utah on the west, New Mexico and the Indian Territory on the south, Kansas and Nebraska on the east, and Wyoming and Nebraska on the north, was organized as a Territory by act of February 28, 1861. It embraces an area of 104,500 square miles, equal to the six New England States and Kentucky. This region is traversed, near its center, from north to south, by the main chain of the Rocky Mountains, whose snow-capped peaks constitute the water-shed of the continent. The mountain valleys have an altitude of from 5,000 to 6,000 feet, while the highest culminating mountain crests attain an altitude of 11,000 to 14,000 feet above the level of the sea. The mountain system of this Territory embraces four-sevenths of the entire area, and includes nearly all the timber and deposits of valuable mineral in the Territory. The altitude and geographical features of Colorado, its remoteness from large bodies of water, and proximity to the Rocky Mountain Range, are circumstances rendering irrigation important to the highest development of agricultural products. Water for this purpose is therefore the great desideratum in the agricultural development of the Territory. The region adjacent to the eastern boundary of Colorado consists of high rolling plains, intersected by but few streams, yet clothed for the most part with fine growth of nutritious grasses. These plains rise gradually in their westward extension until they approach the foot-hills of the mountains in the vicinity of longitude 105° west from Greenwich, where these plains expand into broad valleys, and as they become copiously watered the soil increases in fertility, while the buffalo and gama grasses with which they are clothed increase in luxuriance. These plains comprise three-sevenths of the area of Colorado, a region as large as the State of Mississippi, and, with the exception of the parks and valleys along the mountain streams, include all the arable land. It is supposed that one-sixth of the area of these plains, or 4,766,960 acres, can be irrigated by the water from the streams and rendered exceedingly productive.

In the progress of settlement, the agricultural population sought the region possessing the greatest natural advantages for that branch of industry, and hence located in the narrow belt of country adjacent to the eastern slope of the mountains, in close proximity to large bodies of timber and those streams possessing the best facilities for irrigation. The northeastern part of Colorado is drained by the South Fork of Platte

River and its tributaries, the southeastern part by the Arkansas and its affluents, while the San Luis region on the south and that adjoining on the west are watered by the Rio Grande del Norte, the Rio San Juan, and their respective branches, the former flowing by a general southeasterly course to the Gulf of Mexico, while the latter, in a westerly direction, unites with the Colorado of the West in the southern part of Utah. The western and northwestern portions of the Territory west of the continental divide are drained by Green, Bear, White, Grand, and Gunnison Rivers and their numerous affluents, all uniting in Utah to form the Colorado of the West in its course to the Gulf of California. These tributaries of the Colorado of the West are generally unnavigable and often flow through deep cañons with perpendicular walls of great length. The surface of this Territory, particularly in the mountain regions, is dotted with numerous beautiful fresh-water lakes. The waters are pure and fresh in all the streams and lakes in Colorado, and abound in varieties of delicious fish.

The climate of a region so extensive, with an altitude of from 7,000 to 13,000 feet above the level of the sea, embracing rugged mountains and extensive undulating plains, is necessarily varied, yet this Territory is generally healthy, the mountain air being fresh and pure and favorable to longevity. This region contains no swamp or overflowed lands. The miasmatic diseases which generally prevail in the rapid settlement and improvement of new countries are here of rare occurrence. In the mountain regions the rainy season occurs in May, June, and July, but little falling during the residue of the year. Snowfall begins about the first of October, and continues until April, the heaviest being generally during the month of January. Frost appears about the middle of September, and continues until the opening of spring, which occurs about a month earlier than at the same latitude in the East. The season of plowing and seed-planting is generally in the months of February and March. It is noticeable that vegetation germinates earlier throughout this region as longitude increases westward.

The soil of the valleys rests upon calcareous rock, and consists principally of alluvial formation and deposits from the vast granite mountains on the west. On the streams the soil consists of ashes and sand, with, as an essential element, decomposed vegetable matter. The uplands, or plateaus, possess a soil of warm, sandy loam, with a mixture of gravel and friable clay.

The soil of the valleys, on the plateaux, along the streams, and ascending high up on the mountain slopes, is generally rich, and, when properly supplied with moisture, produces luxuriant crops. Some of the finest agricultural land, including about 800,000 acres, is found on the upper streams of the South Platte, including Caché la Poudre, Big Thompson, Bear Creek, Clear Creek, St. Vrain River, and its main tributary, Boulder Creek, which have their respective sources in the mountains forming the eastern rim of the North and Middle Parks. A very large proportion of the land drained by these streams after debouching from the mountains in which they rise is susceptible of cultivation, while the residue is for the most part adapted to grazing purposes. The creek bottoms vary in width from half a mile to five miles, while the uplands generally consist of low ridges, varying in height from a few feet at the confluence with the Platte to fifty feet at the base of the mountains, seldom rising into abrupt ridges. This region is nearly all susceptible of irrigation, and is clothed with a luxuriant growth of excellent, nutritious grasses. The lower valley of the South Platte includes a large area, possessing a fertile soil, which is being

rapidly taken up by settlers for agriculture and grazing. Deposits of red hematite exist in considerable quantities in the northeastern part of the Territory, near the South Platte, which promises to be of immense value.

Summit County embraces the whole northwestern part of Colorado, including an approximate area of 19,556 square miles. It is a mountainous region, well watered and timbered, abounding in rich mineral deposits, with numerous springs highly charged with medicinal properties.

The timber is generally of excellent quality, and consists of oak, pine, and poplar. In a large portion of this county the soil is fertile, producing a luxuriant growth of indigenous grasses and wild flowers, growing nearly to the summits of the highest mountains. This county has not yet been fully explored, but is known to contain rich deposits of gold, silver, and coal. North Park lies in the northeastern part of this county, and is drained by the Big Laramie and North Platte, and consists of alternate belts of meadow and forest. There are here but few settlers, the altitude rendering it less desirable for agriculture and grazing than some other parts of the Territory.

The extensive forests of the North Park will prove of great value in the future development of the country for fuel and lumber. The soil of the North Park is rich, as shown by the luxuriant native growth of vegetation, yet no extensive experiments have been made in the growth of grain or vegetables. In the expansion of the settlements in Colorado, the rich meadows of the North Park will undoubtedly be utilized for grazing purposes and as hay land.

Middle Park, also situated in Summit County, is directly south of North Park, from which it is separated by a chain of mountains extending from southeast to northwest, constituting part of the grand divide between the waters of the Atlantic and Pacific slopes. This park, 70 miles long, with a width of 50 miles, surrounded by lofty snowy mountain ranges, is drained by Blue River and the headwaters of Grand River. Middle Park is really made up of a series of smaller parks, each somewhat independent of the others, and often representing different geological formations. No considerable portion of this park has been placed under cultivation, yet the soil is good, producing an excellent growth of nutritious grass and an abundant supply of fine timber. That portion of this park which is not covered by forests expands into broad open meadows, and is peculiarly adapted for grazing purposes. The grasses of these extensive meadows are interspersed with beautiful wild flowers of nearly every hue, presenting a most pleasing contrast in crossing the broad undulating surface of the park.

Lake County joins Summit on the south, and extends to the Uncompahgre Mountains on the south, embracing an area of over 15,000 square miles, or about three times the extent of the State of Vermont. This county is drained on the east by the Arkansas River, and on the north, west, and south by the Rio San Miguel, Rio Dolores, Uncompahgre, Dallas, Gunnison, Unaweena, and Cebolta Rivers, and contains but comparatively a small proportion of arable land, which is found in the valleys of the streams. It is traversed by the Elk, Roan, Sawatch, San Miguel, and Uncompahgre Ranges. This county is a mountainous region, the greater portion having as yet been but imperfectly explored. Valuable mines of gold, silver, copper, and iron are reported in various localities, while valuable deposits of coal are known to exist in the southwestern region. The arable land is of but limited area, and is restricted mostly to the narrow valleys of the large water-courses.

The South Park lies in part in the last-named county, and east of the continental divide. It is 60 miles long and 30 wide, embracing an area of 2,000 square miles, surrounded on all sides by gigantic ranges of mountains, whose culminating crests tower above the line of perpetual snow. This park is well watered and timbered, possessing a fine soil, salubrious climate, good roads, and magnificent natural scenery. It abounds in rich mineral deposits, gold being found both in placer and quartz lodes. There are here several sulphur and salt springs. It is strictly a mineral region, although some portions are suitable for grazing, extensive herds of cattle and sheep being here annually fed.

The San Luis Park lies in the southern portion of Colorado, in the counties of Conejos and Saguache, embracing an area of nearly 18,000 square miles, or about twice the size of the State of New Hampshire. It is flanked on the east by the Cordilleras and on the west by the Sierra Mimbres, two vast mountain chains which lift their heads far above the line of perpetual snow. It is watered by thirty-five mountain streams of greater or less volume descending from the incircling crests of snow. Nineteen of these flow into San Luis Lake, while the others discharge their waters into the Rio del Norte in its course to the Gulf of Mexico. The general surface of the park has an altitude of 6,400 feet, while the highest mountain peaks which begirt the plain at their feet rise 16,000 feet above the level of the sea. On the flanks of the great mountains dense forests of pine, fir, spruce, aspen, hemlock, oak, cedar, and piñon alternate with broad natural meadows, producing luxuriant growth of nutritious grasses. The plains are dotted with timber, but are for the most part clothed with rich grasses, upon which stock subsists throughout the year without any other food, and requiring no shelter. The soil is fertile, and, with the aid of irrigation, produces abundant crops.

The mountain air is salubrious and the scenery grand. Thermal springs abound in this region, generally highly charged with medicinal properties, in which sulphur predominates.

That portion of Conejos County lying west of the San Luis Park is a mountainous region, containing gypsum, gold, and coal; abounding also in mineral springs, cold, thermal, and hot. It is drained by the headwaters of the Rio Grande and the streams which unite to form the Rio San Juan, the latter joining the Colorado of the West in Southern Utah. It embraces a considerable area of arable land, which, with irrigation, produces fine crops of wheat, barley, and potatoes, but grazing is the chief occupation of the population, who are mostly of Mexican descent, and speak the Spanish language.

The southeastern part of the Territory is drained by the Arkansas, with its tributaries, and embraces a large area of land adapted to agriculture. Timber is found on the mountain slopes, and the plains are clothed with fine grasses, affording superior facilities for grazing.

Remunerative mining operations of Colorado date as far back as 1858, when gold was taken from the gulch mines or placers in Cherry Creek, opposite the present city of Denver, although the discovery of the precious metals was at an earlier period. The large quantities of gold produced from crude operations soon attracted thousands of persons from all parts of the country. Then followed the discovery of rich deposits of gold, silver, copper, lead, and zinc which exist so abundantly in the granitic and metamorphic rocks constituting the true backbone of the Grand Cordilleras. Equally important also is the development of the rich deposits of mineral fuel now known to exist in this region.

Geologists have found it difficult to ascertain the precise extent of the great mineral belt of Colorado, but it is believed that useful minerals will be found abundant in nearly every section in the Rocky Mountains where the out-croppings of the gneissic and granitic rocks occur. The principal mining operations have been conducted in the counties of Gilpin, Clear Creek, Park, Summit, Lake, and Boulder, embracing a belt from 30 to 60 miles wide. The richest silver mines developed are in the vicinity of Georgetown, and the gold mines which have produced the richest ore are in the several vicinities of Gold Hill, Black Hawk, Central, and Nevada.

In the mines of Colorado the gold ore rarely exists in considerable quantities without an intermixture of more or less silver, or the silver without tracings of gold and copper, and frequently even in the richest mines of the Territory all three metals are combined in the same ore. The placers are distributed over a large extent of country, and continue to yield handsome returns. Water is generally abundant, and, with every natural facility for working the placers, it is probable that they will present a fine field for years for well-directed enterprise. The surveyor general estimates the product of the placers of Colorado during the last fiscal year at \$1,500,000. The mining interest has been finally established upon a permanent and substantial basis, and is a separate branch of industry. It is regulated by science and capital, and the product of the gold and silver mines promises soon to equal that of the most promising days of the placers. The surveyor general estimates the coin value of the mineral product of the quartz mines for the year ending June 30, 1870, at \$2,500,187; the value of improvements at \$6,102,460 in coin; and the value of capital employed in this branch of industry, at \$2,362,660 in coin.

Since the date of last report many important discoveries have been made for the treatment of ores at reduced cost, which will thus bring large quantities of low-grade ores to the mills which have been heretofore regarded as of no practical value. The surveyor general reports the cost of mining and delivery of the ore on the surface at \$4 per ton, hauling, \$1 25 per ton, and milling, \$2 50 per ton; the total cost thus reaching \$4 75 per ton.

Copper is not found in a native state in large quantities, but exists in the form of pyrites distributed throughout the gold and silver mining districts, and in the mountains surrounding the North, Middle, and South Parks. Copper glance is met with near Idaho City, in Clear Creek County, at Pleasant View, and in other localities.

Lead occurs principally as an argentiferous galena, and is found in juxtaposition with gold and silver; but, like copper, this metal has not been mined except for fluxing in the process of smelting other ores. The most extensive deposits of galena occur in the lodes in the vicinity of Georgetown, where it yields to the ton from 100 to 600 ounces of silver.

Iron pyrites occur throughout all the mines of Colorado in cubes and pentagonal dodecahedrons. Micaceous iron ore occurs in Elk Creek in fine crystals like mica; specular iron ore on the Cache la Poudre, St. Vrain River, and in some other localities. Spathic iron ore abounds in the vicinity of Georgetown; titanite iron ore, near Central City, and hydrated oxide of iron is frequently met with at South Boulder, Golden City, as well as in other localities, while red and brown hematite occurs in abundance in the vicinity of the deposits of coal. Zincblende is found in the mines around Georgetown and Nevada City.

Large areas of the plains of Eastern Colorado are underlaid with lig-

nite and coal, which also exists along the base of the mountains and in the parks. The survey of the northern boundary of New Mexico in 1868 revealed the existence of vast deposits of bituminous coal in the southern part of Colorado, in the vicinity of the Raton Pass, and in numerous localities from the San Luis Valley to the west boundary of the Territory. Near the Rio la Plata it is spread over a large area, 80 acres in one place being exposed. It is found in the valley of the Purgatory River, from Trinidad to the source, in almost one continuous line of out-croppings. The coal mines which have been the most extensively developed occur in the older settled portions of Colorado, in the counties of Boulder, Jefferson, Arapahoe, and Douglas. The Marshall mine of South Boulder Creek is the most valuable and extensive deposit of tertiary coal which has yet been developed west of the Mississippi River. Cannel coal of good quality has been discovered on the Rio San Juan and the Rio la Plata, and Albertine coal, or solidified petroleum, is reported on White River, in the western part of Summit County, several feet in thickness, and reported as extending over more than a thousand square miles. There are also many other minerals scattered throughout the Territory of greater or less commercial value and interest to science.

A large area of Colorado is yet but imperfectly explored. Thirty miles west of Denver, at the town of Idaho, in Clear Creek County, there are warm springs of some celebrity, and at which several large hotels and bath-houses have been erected for the accommodation of invalids and others. The water varies in temperature from 80° to 100° F. in the different springs. There is a remarkable soda spring in Current Creek, in Fremont County, 31 miles northwest of Cañon City, situated on the apex of a conical hill 100 feet in diameter and 40 feet high. The flow of the spring is insignificant, but the water is of the strongest solution. Several springs of the same character exist at Cañon City, the waters of which are quite palatable, and are drank habitually by the inhabitants of that vicinity. In the vicinity of Soda Creek rich deposits of gold have been discovered, but the miners have been unable to reach the bed rock in consequence of the heat, which increases rapidly after reaching a few feet below the surface. The use of the water, both internally and externally, is highly beneficial in rheumatic and other kindred diseases. There are soda springs ten miles southwest of Denver, from which a small amount of soda is manufactured. It is reported that they are capable of producing three tons of crude soda per day, suitable for chemical and mining purposes. A short distance from the soda is a small white sulphur spring. Several alum springs exist in the same neighborhood, in and around which crystallized alum is found by digging. Late geological reconnoissances in Colorado have revealed the existence of soda lakes and springs, which are regarded of importance. They occur in the metamorphic rocks, twelve miles southwest of Denver, between Turkey and Bear Creeks, covering considerable area. The incrustation on the water has the appearance of discolored ice, while the earth surrounding is impregnated with soda. The water contains 20 per cent. of soda, while the earth contains 33 per cent. of the salts. Soda springs, or boiling fountains, as they are termed, occur on Fountain Creek, three miles above Colorado City, in El Paso County, at the northeastern foot of Pike's Peak. An analysis of the waters shows they contain carbonate and sulphate of soda, chloride of sodium, sulphide of calcium, and small traces of magnesia. These salts exist in abundance and constitute an important article in the manufacture of glass, with silicic acid, as well as in the refining of gold and silver when used in

the form of bicarbonate of soda. The water is very cold, and comes up with a bubbling sound, gas escaping on both sides of the stream and in its bed. The water is quite palatable when taken as an effervescent beverage with acid and syrup.

The South Park Salt Works are situated southwest of Fair Play, the springs covering fifty acres. They have been worked heretofore to some extent by furnace evaporation, producing as high as two tons a day, at a cost of nearly \$50 per ton. It is estimated that these springs discharge enough brine to yield daily at least forty tons of salt. These works have lain idle since the completion of the railroads in Colorado, as salt can be purchased in other localities and shipped to the Territory at a less cost than it can there be produced. There are several other small salt springs and a white sulphur one in the same locality. Salt occurs in several localities in a comparatively dry state. All grades of it find a ready home market for mining, grazing, or domestic purposes. A mineral spring is reported in the northwestern part of Lake County, west of the Arkansas River, the waters of which in taste resemble some of the mineral spring waters at Saratoga, New York. Of the mineral springs of Colorado those charged with sulphur are the most important and abundant. Probably the most valuable of this class is the hot sulphur spring in the Middle Park, near the right bank of Grand River, and forty feet above it, breaking out from a hillock of near that height formed by deposit from the water. There are several springs near at hand, evidently from the same source, forming one stream or brooklet of forty inches, and uniting with Grand River. The temperature of the water at the outlet ranges from 109° to 116° F. Besides white sulphur, the water shows iron and magnesia, while the deposits around the spring contain gypsum and sulphur. No analysis of the water has been reported. A basin in the rock forms an admirable natural bath, and the waters when applied externally are found wonderfully efficacious in rheumatic and scrofulous diseases and for bruises and sprains. On the opposite side of the river there is a small white sulphur spring. Springs of the same character are found 75 miles to the northwest, on the headwaters of White River. Hot sulphur springs have also been discovered on Grand River, near the mouth of Roaring Fork, 100 miles southwest of those mentioned in the Middle Park. The Pagosa Spring is on the Rio San Juan, just north of the south boundary, near the one hundred and third degree of longitude west from Greenwich, close to the base of the San Juan Mountains, at an altitude of 7,000 feet above the level of the sea. It is situated on the low lands, 200 yards from the river, and is 80 feet long and 50 wide. The earth near the edges is covered with incrustation from two to four inches thick, composed mainly of sulphur and iron, perforated, and having the appearance of pumice stone, but possessing the solidity of marble. The water has a bluish cast, boiling up in the center, with a heavy bubbling sound, in a column fourteen inches high and two feet in diameter, where it has a temperature of 200° F., being cooler at the surface on the outer edges. When sufficiently cooled for drinking purposes it is found quite palatable, resembling Congress water. The waters of this spring, containing sulphur and iron, are reputed to possess great curative qualities, and are the resort of Mexicans and Indians for hundreds of miles. For a distance of 300 feet around this spring the earth is perforated, and a sulphurous vapor constantly issues through apertures of various sizes. The Indians and Mexicans procure vapor baths by wrapping themselves in blankets and prostrating themselves upon the ground over these apertures. This spring, standing at the foot of a high mountain, in the midst of pure, fresh mountain air, and surrounded by magnificent

scenery, possesses many natural advantages for a great fashionable resort in the future settlement of that part of the country. Several sulphur springs here occur along the Rio Navajo, and in other places in the southern border of the Territory. A cluster of hot white sulphur springs, some of which are highly charged, occurs near the western side of the South Park, in Lake County, along the banks of Chalk Creek, a stream entering the Arkansas from the west. Again, near the Raton Pass, between the Arkansas River and San Luis Park, another very large sulphur spring exists, the waters of which reach a temperature of 100° or 105° F. A fine magnesian spring has been discovered at the base of a high mountain on the Rio La Plata, in the southwestern portion of the Territory.

Colorado is preëminently a mining region, its mineral wealth having attracted the largest portion of its present population. It is, therefore, but recently that special attention has been given to the culture of the soil, and hence we have in this report comparatively meager data; still, sufficient is known to make it apparent that, by proper culture and irrigation, many of the choicest fruits, vegetables, and cereals of the north temperate zone can be grown here. Of the cereals, wheat, oats, barley, and corn grow in perfection. Wheat has been grown throughout the length of the Territory, from north to south, in San Luis Park, south of the Arkansas, and nearly all along the Arkansas, North Platte, and South Platte, and their branches. Thus far spring wheat has been almost exclusively cultivated, in view, mainly, of the difficulty in preparing the ground in autumn for sowing winter wheat. All the varieties which have been sown grow well and represent their several peculiarities, but the White Sonora is the most highly prized, on account of the beautiful white flour it makes and its heavy yield. The measured bushel of Colorado wheat will weigh from 62 to 64 pounds. The wheat grown in Colorado is claimed to have the same peculiarities as that of the Pacific coast—to require to be moistened before grinding, to yield more flour than the same bulk or weight of wheat grown in the East, and to bear transportation to any part of the world without damage from climatic influences. Oats yield abundantly and are raised with ease. The demands for barley have not been such as to induce the culture of large crops, but so far as it has been tried it produces well. Rye and corn produce good crops, but the yield is not quite equal to that of the Eastern States or the Mississippi Valley. The culture of potatoes and all other root crops, as well as melons and the most common kinds of vegetables of the same latitude, both east and west, has been attended with the most satisfactory results. There is reason to believe that all the hardier, and perhaps other, fruits may be here raised successfully.

Orchards have been planted in the valley of the South Platte and Upper Arkansas, the experiments, so far as reported, having, in the main, proved satisfactory. The subject of planting forest trees upon the treeless plains in Eastern Colorado, where timber is deficient, has engaged the attention of but few settlers as yet, but the feasibility of this matter has been demonstrated in the fine grove of cottonwood now growing luxuriantly in the city of Denver.

The surveyor general, in his annual report, estimates the average yield of crops in the Territory as follows: Wheat, 30 bushels; oats and barley, 35 bushels; corn, 30 bushels; and potatoes, 100 bushels per acre. It is common among farmers to produce, with the aid of irrigation and proper culture, 60 bushels of wheat, 80 bushels of oats, and 70 bushels of barley, demonstrating the great fertility of the soil and the benefits

derived from irrigation as an offset against the additional expense incurred in its use. All kinds of grain which can be produced in the same latitude east can be raised in perfection, with the aid of irrigation. Melons and vegetables attain enormous proportions and at the same time retain the tenderness, sweetness, and juiciness of the smaller growth in other sections. Wild fruits are everywhere abundant and delicious in flavor. The crop of 1869 was larger than that of the year 1868, and has been placed at 675,000 bushels wheat, 600,000 bushels corn, 550,000 bushels oats and barley, and 350,000 bushels of potatoes and other root crops, which, with the hay and dairy product, is estimated to possess a market value of at least \$3,500,000. The present season has been here one of unparalleled productiveness, it being estimated that the aggregate agricultural product of Colorado for 1870 will be much greater than that of any preceding year, and its market value correspondingly enhanced. The surveyor general estimates the whole area in cultivation in the Territory at 63,463 acres, of which, during the present year, 22,750 acres were sown in wheat, 12,571 acres in oats, 3,142 acres in barley, 20,000 acres devoted to the culture of corn, and 5,000 acres to the production of potatoes and vegetables. It will be observed that this estimate does not include lands devoted to grazing, dairying, and to the growth of grass for hay, which would probably swell the area to 200,000 acres. While the agricultural interests of Colorado show every indication of thrift and rapid development and expansion, it must remain subordinate to the grazing interest, which promises for all time to come to prove the second great source of wealth in the Territory. A very large area of this region, including extensive tracts of the gravelly plains, the mountain slopes, and foot-hills, as well as many portions of the valleys, possesses peculiar advantages for sheep and wool growing. This interest has already attained considerable importance. The surveyor general estimates that of the wool clip of this year at least 2,000,000 pounds have been shipped to the eastern markets alone. The amount required to supply the local demand would probably increase this amount by several hundred thousand pounds. The rich indigenous pastures afford an abundant supply of food throughout the year. Shelter is not generally needed during the winter, so that sheep can be kept at a trifling cost. In this congenial climate they multiply with great rapidity and the fleeces exceed in weight and quality those of similar breeds in other localities. Besides, the various diseases incident to the crowded pastures and folds of the East are rarely met with. These circumstances cannot fail to place this region, at no distant day, among the first wool-growing districts in the United States. The raising of horses, cattle, and mules is attended with the same facility as sheep-growing, and each of these interests is daily increasing in importance.

The increased facilities of communication and transportation, both east and west, will tend to stimulate grazing industry. A few years ago beef cattle were driven from California into Colorado to find a market, the latter region not then producing sufficient beef to supply local demand. Since the completion of the railroads to the Pacific, large shipments of cattle have been made from Colorado to supply the market of California.

Since the date of last report the Kansas Pacific Railroad, from Kansas City, Missouri, to Denver, the Denver Pacific, uniting Denver with Cheyenne, on the Union Pacific Railroad, and the road between Denver and Georgetown, have been finished and are in operation. The completion of these roads, which connect with the grand railroad system of the

continent, will give new impetus to immigration, reduce the rates of transportation to and from the Territory, and add largely to the development of the vast resources of this region, and to the settlement of the agricultural wastes and of the broad plains and mountain slopes so admirably adapted to raising horses and cattle, as well as wool-growing.

Since last report there have been surveyed 3,269,104.27 acres. The whole area over which the lines have been extended here is equal to 7,491,280 acres. The surveys during the last fiscal year were mainly south of the Arkansas, embracing the Vigil and St. Vrain region; surveys having been here extended pursuant to act of Congress approved the 25th February, 1869. During the same period there were taken up 211,983.44 acres, leaving 62,576,670.56 acres yet to be disposed of.

WYOMING

lies between the forty-first and forty-fifth degrees of north latitude, and the twenty-seventh and thirty-fourth degrees of west longitude from Washington, having on the east Dakota and Nebraska; on the south Colorado and Utah; on the north Montana; while on the west it adjoins Montana, Utah, and Idaho.

It was organized, by act of July 25, 1868, out of the region attached to Dakota by act of July 26, 1864; having formerly been included within the limits of Idaho, and still earlier known as part of Nebraska.

Wyoming has an average length from east to west of 355 miles, with a width of 276, embracing an area of 97,833 square miles, or 62,645,120 acres; equal to that of the States of New York, Pennsylvania, and Connecticut.

This Territory comprises an extensive elevated region, traversed, in a general southeasterly and northwesterly course, by the main chain of the Rocky Mountains. The Wind River Range, in the northwestern part, is a portion of the Rocky Mountain system, and constitutes a part of the grand continental divide.

The highest culminating crest in the Wind River Range is Fremont Peak, near longitude 110° west from Greenwich, and latitude $43^{\circ} 30'$ north, attaining an altitude of 13,000 feet above the level of the sea. This peak constitutes the initial point of three grand watersheds: The Columbia, flowing into the Pacific, after draining, with its affluents, the western part of Wyoming, all Idaho, Northern Nevada, Oregon, Western Montana, and the greater part of Washington Territory; the Colorado of the West, that discharges its waters into the Gulf of California, after draining in its course Southwestern Wyoming and portions of Colorado, Utah, Nevada, New Mexico, Arizona, and California; and, lastly, the Missouri, which, with its large and numerous affluents, after watering Northern and Eastern Wyoming, with a large area of Colorado, Montana, Dakota, Iowa, Kansas, Nebraska, and Missouri, unites with the Mississippi in its course to the Gulf of Mexico.

All the streams west of the Wind River Range, including John Gray's and Gros Ventres Rivers, have their rise in that range, and unite with the Snake River in Idaho, in its westward course into Washington Territory, where it joins the Columbia. Green River and its affluents, in the southwestern part of the Territory, drain an area of 11,000,000 acres. One-fourth of the entire area of Wyoming is drained by the Yellowstone and its affluents, flowing northeast 400 miles into Montana and Northwestern Dakota, where it unites with the Missouri. This river has its rise in Yellowstone Lake, the only lake situated east of the Wind

River Range, near the northern boundary, being 60 miles long and from 10 to 20 wide.

The Yellowstone is navigable for steamers during the spring and early summer for 300 or 400 miles from its junction with the Missouri, at Fort Union, Dakota. Wind River, having its source in the mountain range in the vicinity of Fremont Peak, flows southeast 100 miles through the southern flank of the Big Horn Mountains, uniting with the Popo Agie, near the forty-third parallel, where it turns to the north, and is known as the Big Horn River in its course to the junction of the Yellowstone, in Montana, to which it is quite an important feeder. The other principal affluents of the Big Horn in this Territory are Gray Bull River and Bad Water Creek. Powder River rises in the Big Horn Mountains, and, by its numerous branches, among which are the Little Powder, Salt Clear Fork, and Crazy Woman's Fork, drains a large area, underlaid with the soft yielding rocks of the lignite tertiary, and discharges a volume of water into the Yellowstone near longitude $105^{\circ} 30'$, and latitude $46^{\circ} 30'$ north, in Montana.

Tongue River also rises in the Big Horn Range north and west of Powder; is nearly 100 miles in length, and in its course to the junction of the Yellowstone flows through the same geological formation as the Powder River. The Little Missouri drains a small extent of country in the northeastern portion of the Territory, between the North Fork of Cheyenne and the Little Powder.

The Black Hill country, in the northeastern part of Wyoming, is drained by the North and South Forks of Cheyenne River, which, after an eastward course of nearly 400 miles, unite with the Missouri 60 miles above Fort Pierre, Dakota. The North Fork of Cheyenne, which receives most of its volume from the Black Hills, rises further west in the tertiary formation, and forms the divide between the waters of the Yellowstone and Missouri. The South Fork has its source in the same divide, and, after flowing along the southern base of the Black Hills, and receiving numerous tributaries, unites with the North Fork, 30 miles east of the Black Hills, to form the Big Cheyenne. Like most of the streams of this region, there is great difference between the high and low water mark in both the North and South Forks of the Big Cheyenne. During the rainy season, and while the snows are melting on the mountains, these streams discharge immense volumes of water, but after this season they may be forded at many points. The South Platte and its numerous branches drain the whole southeastern portion of Wyoming, south of the forty-third parallel and east of the continental divide, including an area of 28,000 square miles in Wyoming, having its source in North Park, Colorado.

The Big Laramie, one of the principal affluents of the North Platte, has its source in the North Park, in Colorado, and is fifty yards wide and two feet deep.

The Little Laramie, coming from the Medicine Bow Mountains, flows through a synclinal valley, in places five miles in width.

The Chugwater, another affluent of Laramie, is 100 miles in length, having its source in the Laramie Range. Sweetwater River has its source near South Pass, flows east over 200 miles along the northern base of the Sweetwater Mountains, and joins the North Platte near the foot of Independence Rock. Medicine Bow River, rising in the Elk Mountains, is a considerable stream of clear, pure water, flowing through a broad valley, and is fringed with a wide belt of bitter cottonwood.

Poison Spring River rises between the Rattlesnake Hills and Independence Rock, and unites with the North Platte at the foot of Red

Butte, west of Fort Casper. The waters of this river contain an arsenious solution, said to be destructive to human life; hence the name Poison Spring River. Fish are found in the North Platte and its affluents. The waters of nearly every stream in Wyoming are pure, fresh, and palatable, having their source in mountain springs supplied by the melting snow on the mountain ranges which intersect every portion of the Territory. In approaching Wyoming from the east the eye of the traveler falls first upon the Black Hills, which lie part in Dakota and also in the northeastern part of Wyoming, being situated between the forty-third and forty-fifth degrees north latitude, and the one hundred and third and one hundred and fifth degrees of west longitude, deriving their name from the dark and gloomy appearance which the range presents in the distance. Recent geological reconnaissance shows the Black Hills to occupy an area 100 miles long by 60 in width, embracing 6,000 square miles, one-third of which is covered by heavy forests of pine timber.

The base of the Black Hills is 2,500 to 3,000 feet above the sea-level, while the highest culminating crests attain an altitude of 6,700 feet.

In geological structure the central portion of the Black Hills is composed of red feldspathic granite, resting upon a series of metamorphic slates and schists, the various fossiliferous formations of this region following in their order to the summits of the cretaceous upon each axis of elevation, the whole being inclined at a greater or less angle against the granitoid rocks.

The Laramie Range lies southwest of the Black Hills, with which it is connected, by a low anticlinal, which is sometimes concealed by recent tertiary deposits; the range, in the aggregate, being composed of a number of small spurs or ranges. The most southerly extension unites with the main range of the Rocky Mountains near Long's Peak, in Colorado, and extends northward, in the form of a curve, to the Red Buttes, at the confluence of the Poison Spring with the North Platte.

This range, in geological structure, is composed of a nucleus mostly of red syenite, with the fossiliferous, silurian, carboniferous, triassic, jurassic, cretaceous, and in places the lignite tertiary formations, inclining from each side of a central axis at various angles. The Big Horn Mountains, which occupy an area 180 miles long and 50 wide, a little north of the geographical center of the Territory, are the most important spur or range of the main chain of the Rocky Mountains east of its culminating crests. The general trend of this range is nearly northwest and southeast, the northern extension passing beyond the northern limits of Wyoming into Montana, while the southern has made a flexure to the west, where it soon loses its granitoid character, and thence, to the junction with the Wind River Mountains, is composed entirely of more modern eruptive rocks.

An anticlinal valley extends from the base of the Big Horn Mountains across the prairie, connecting them at Red Buttes on the North Platte with Laramie Range. Geologically, the Big Horn Range is composed, in the nucleus or central portion, of granite and granitoid rocks, with the same series of fossiliferous formation inclining at various angles from the sides of elevation, as are to be observed along the base of the Laramie Range and around the Black Hills. The highest peaks attain an altitude of from 8,000 to 12,000 feet above the level of the sea, and are clad with perpetual snow. The eruptive portion connecting it with the Wind River Mountains is exceedingly rugged and inaccessible, presenting the appearance of a connected series of basaltic cones, abounding in magnificent mountain scenery throughout the entire extent. In geological

structure, the Wind River Mountains, in the vicinity of the headwaters of Wind River, appear to be composed entirely of eruptive rocks, while to the northward the mass is composed largely of red and gray feldspathic granite, with the fossiliferous rocks reaching high up the sides and inclining at various angles. Besides these ranges, the Sweetwater Mountains, which extend east and west, north of the forty-second parallel of latitude, between the South Pass at the headwaters of the Big Sandy and the North Platte, the Sweetwater River draining their northern base.

The Rattlesnake Range lies northeast of the Sweetwater, and north of Independence Rock, while to the northwest, between the Yellowstone and Big Horn Rivers, is the southern extension of the Snow Mountains from Montana. In the southern part of the Territory the Medicine Bow Mountains, whose highest peaks reach above the line of perpetual snow, and the eastern part of the Territory, are drained respectively by branches of the Laramie and North Platte, and to the north are the Elk Mountains, in which the Medicine Bow River has its source. Still further northward and to the west of Fort Halleck is Sheep Mountain, composed mostly of yellowish gray sandstone.

The mountains in the southwestern part of the Territory are the Bishop, Queen, and Horned Mountains, spurs of the Sierra Escalante in Colorado. It is a noticeable feature in the mountain system of Wyoming that nearly all the ranges composed of eruptive rocks are exceedingly rugged in their outline and irregular in their trend, while those composed of a granitoid nucleus extend in a more continuous line of fracture, and present far less inequality in their outline. Wyoming is strictly a mountain region, a great portion of which has not as yet been thoroughly explored; the general surface of the valleys being 3,000 to 6,000 feet above the level of the sea, while the mountain ranges rise to an altitude of from 3,000 to 7,000 feet higher. Many of the mountain slopes and foot-hills produce bunch and buffalo grasses, occasionally with scattering pine, spruce, and aspen timber, while higher up on the mountain sides, and on the summits of the lower ranges, vast forests of excellent pine, spruce, and hemlock timber are to be found. The existence of these immense forests will wield an important influence in the development of the extensive deposits of mineral to be found in this region. Among the regions producing the largest forests are the Black Hills, in the northeast, the Medicine Bow, Elk, Sweetwater, and Big Horn, and Laramie Range east of the continental divide, and on the mountains in the vicinity of Green River, as well as sections of the Wind River Range. The timber frequently attains large size, is straight, and will produce an excellent quality of lumber suitable for the demands of civilization. Owing to the altitude of this region, and the small rain-fall during the year, the climate is too arid for the fullest development of vegetation without the aid of artificial irrigation. The soil of the valleys of all the streams flowing into the North Platte, and along bases of many mountain ranges, is fertile, and, wherever the lands can be properly irrigated, abundant crops of cereals and the more hardy vegetables can be produced without the slightest difficulty. The valleys of the Laramie, Chug Water, and other streams produce heavy growths of rich indigenous grasses, hundreds of tons of which are annually cured for hay. Many of the mountain valleys are sheltered from the severe and sweeping winds of winter, and in these stock may be kept throughout the winter without shelter. The region west of the Laramie rises to a greater altitude; the season is consequently shorter. The climate of Wyoming is mild for the greater part of the year, subject, however, to sudden changes and extreme cold

in winter, especially above the beds of the valleys. The air is pure, dry, and healthy, free from miasmatic exhalations. The Territory abounds in mineral springs, cold and thermal, among which are alkaline, sulphurous, saline, and chalybeate. Some of these springs have already reached considerable celebrity on account of the curative qualities of the water. Hot sulphur springs are the most numerous along Yellowstone River and around Yellowstone Lake. Wyoming is extremely valuable as a mineral region. The recent geological reconnoissances which have been made demonstrate the fact that in the tertiary formation extensive beds of coal exist, often in juxtaposition with rich deposits of iron ore. The area of the coal field east of the mountains in Colorado and Wyoming, between Lodge Pole Creek and the Arkansas River, has been estimated at 5,000 square miles. In connection with this coal, deposits of limonite have been found, generally in the form of nodules, varying in weight from one ounce to several hundred pounds. From the results of the experiments in utilizing these deposits of coal and iron ore, it is probable that a large proportion of both these deposits will in time be consumed, adding largely to the wealth and development of the country. In Colorado these beds of coal have been mined to a considerable extent, the veins varying in thickness from five to eleven feet. On Cooper Creek, fifteen miles west of Laramie Station, a vein of coal nine feet thick has been opened, the coal, though light, being pure and compact. Other veins, some of which are from ten to twelve feet in thickness, have been found on Cooper's Creek. Some portions of this coal have the appearance of dull bituminous, while others resemble the anthracite of Pennsylvania. It is of the best quality, being close, compact, and moderately heavy, but, like most of the tertiary coals, upon being exposed to the action of the atmosphere it crumbles into small pieces. Nearly all the land between Rock Creek and Cooper's Creek has been selected in advance of the public surveys, with a view of securing title whenever surveyed. In the tertiary beds around Elk Mountain several seams of coal occur, one six feet in thickness; the hardened beds above and below the coal being filled with imperfect impressions of deciduous leaves and plants. One of the most marked developments of the coal beds occurs at Carbon Station, on the Union Pacific Railroad, eighty miles west of Laramie Station. The openings are within two miles of the railroad, to which a track has been laid; the coal is compact and pure, and regarded as superior to the bituminous, and although not as hard, it is but little inferior to the anthracite. It has been used on the locomotives of the Union Pacific Railroad, as well as for domestic purposes, giving entire satisfaction. At Creston, on the Union Pacific Railroad, just east of the continental divide, a vein of coal of good quality has been reached at the depth of eighty-three feet. Near Separation, ten miles west of Rawlings Springs, a vein has been opened, supposed to be the same bed that is opened at Carbon, near Rock and Cooper's Creeks. In case it should prove that all these openings are in the same bed, the deposits will underlie more than one hundred square miles. The coal seam at Separation is eleven feet in thickness, and of excellent quality. After crossing the continental divide, along the line of the railroad, the first coal vein which has been opened is near Point of Rocks, forty-five miles east of Green River, on Bitter Creek. Within a vertical height of eighty feet five veins have been opened, which are respectively five, one, four, three and six and one-half feet in thickness, the lowest bed being one hundred feet above the bed of the creek. This coal is harder, purer, and more compact than any yet discovered west of the Laramie Mountains. Besides these seams

there are several other beds in this vicinity, but which have not yet been fully examined by the miner. On Rock Spring Creek, twenty-eight miles from Point of Rocks, a coal bed, four feet thick, has been opened. It is reported outcrops of coal exist in over fifty localities along the line of the Union Pacific Railroad. The points mentioned at which coal has been discovered are all in the vicinity of the line of the railway, and it is presumed that as the country becomes thoroughly explored, mineral fuel will be found in hundreds of new localities. The supply of timber within accessible distances of the railway will soon be consumed; the existence, therefore, of these vast deposits of mineral fuel cannot be too highly estimated. The Union Pacific Railroad passes directly through these extensive coal fields, by means of which, with its connections, the coal can be transported to the extensive regions in the surrounding States and Territories. Iron ore exists in the Black Hill country in large quantities, and is reported in other localities. Magnetic iron ore, of superior quality, and in vast quantities, is found near the source of the Chug Water, and in the bed of that stream, and on the hillsides along the stream. Nodular iron ore occurs in various localities, in juxtaposition with the coal deposits along the railroad line. The development of the vast deposits of coal and iron will do much toward the settlement of this region, and add largely to the revenue of the country. Gypsum, copper, and lead occur in several localities in the Territory, but no action is known to have been taken looking to the development of these deposits. There are several localities in the Territory where the precious metals are found. Gulch mining for gold is carried on in several places with various results, and as mines in one locality become exhausted, new discoveries are made in other sections. A portion of the mountain system of Wyoming is a continuation northward of the same mountains in which are found the rich mines of Colorado. Since the opening of the Union Pacific Railroad many small towns have sprung up along the line, rich mines have been opened, and numerous settlements made.

Since the date of last report the Denver Pacific Railroad has been completed, uniting Denver and Cheyenne. These increased railroad facilities will open up to settlement a large area of country and largely enhance the wealth and prosperity of the Territory.

Cheyenne, the political capital and chief city of the Territory, is situated on Cow Creek, a branch of Lodge Pole Creek, 516 miles west of Omaha, and 102 miles north of Denver, at an altitude of 6,000 feet above the level of the sea.

There are 59,164,787.80 acres of public lands in Wyoming yet to be dealt with, in the way of giving title under the laws of the United States.

MONTANA.

This recently-organized Territory has a surface of 92,016,640 acres, of which area one-half may be considered agricultural and grazing lands and the residue timber, mineral, mountain ranges, and lands which may be reclaimed by irrigation. There have been surveyed up to June 30, 1870, 1,585,545 acres.

Montana extends from the forty-fifth to the forty-ninth parallel of latitude—the northern international boundary—and from the twenty-seventh to the thirty-ninth meridian of longitude, constituting a larger extent of territorial area than that of New York, Pennsylvania, and Ohio combined. In the production of gold this Territory is second only to California, and embraces within its limits the range of the Rocky

Mountains and the sources of the Mississippi and Columbia Rivers—two of the largest on the continent—that empty into the Atlantic and Pacific Oceans.

The Rocky Mountain Ranges, traversing the Territory from its southern to its northern boundary, with a width of over 200 miles, constitute the most striking geographical feature of Montana.

The Territory is divided by these ranges into two principal basins, and the spurs subdivide the basins into numerous valleys, which have an elevation of from 4,000 to 5,000 feet above the level of the sea. The basins are formed by the Bitter Root, which is the highest and most westerly, and the Rocky, Wind River, Big Horn, and Bell Ranges, all of which have a trend northwest and southeast, and contain mines of gold and silver. The loftiest peaks vary from 10,000 to 14,000 feet, and their summits are covered with ice and perpetual snow. A large amount of moisture is condensed from the atmosphere upon the summits of these ranges, which falls principally in the form of snow on the slopes, melting during the warm season and thoroughly saturating the earth, inducing a fine growth of grass and timber throughout these regions.

Although Montana is abundantly supplied with rivers of considerable size, the great elevation of the Territory causes such rapid currents as seriously obstruct navigation. West of the main range of the Rocky Mountains the rivers are unnavigable except for light-draught steamboats, for short distances, during certain seasons of the year, being frequently interrupted by shoals, rapids, and falls.

The Little and Big Blackfoot, the Missola, and Hell Gate Rivers flow west by north, and after receiving the waters of the Bitter Root and Flat Head form the Clark's Fork of the Columbia River, which flows to the Pacific Ocean.

The Oregon Steam Navigation Company has successfully navigated Clark's Fork from Pend d'Oreille Lake to Thompson's Falls, with small stern-wheel steamers. Flat Head Lake, in the northwestern section of the Territory, is the only lake of any considerable size. It is a beautiful sheet of limpid water, 35 miles long and 15 wide, surrounded by choice agricultural lands.

The Missouri River, on the eastern slope, is navigable to Fort Benton, 300 miles. This is the principal depot of supplies for the whole Territory. The Yellowstone River is navigable, but has not been sufficiently explored to determine its capabilities for commerce. The Crow and Sioux Indians have extensive reservations in the valley of the Yellowstone, and the country is wild and for the most part unexplored, and being set apart for the hunting grounds of those nations the white settler is excluded.

The portion of Montana on the western slope forms a basin 250 miles long and 75 wide, drained by the rivers forming Clark's Fork, before alluded to. This basin contains the best timber and as good grazing and farming lands as are in the Territory. The warm moist winds from the Pacific induce a more vigorous development of vegetable life than in other portions, where the lofty ranges of the Rocky Mountains prevent these winds from exercising their influence. This basin comprises eight beautiful valleys, viz., the Deer Lodge, Blackfoot, Bitter Root, Flat Head, Jocko, Hell Gate, Flint Creek, and Mission. These valleys are celebrated for their agricultural productions and the mildness of their climate. Tomatoes, melons, and the smaller fruits mature to great perfection, while wheat, oats, barley, rye, and potatoes are cultivated in great abundance. Hell Gate Valley, 25 miles long and 6 broad, possesses fine agricultural and stock-raising resources. In Bitter Root Valley,

60 miles long and 8 wide, is situated Fort Owen, around which a flourishing settlement exists, the valley being capable of sustaining a large population. Deer Lodge Valley is celebrated for its picturesque scenery and the richness of its mineral and agricultural resources. It is 35 miles long and 10 broad, surrounded by low rolling hills covered with nutritious grasses, affording excellent pasturage. Cattle usually winter well in this section without hay or grain, and without housing. A large extent of this western slope is one of the most admirable stock countries on the continent. The valleys and foot-hills furnish a large surface of natural meadows, whose products of different varieties of grasses are equal in quantity and quality to those of the cultivated meadows of the Middle States. The results already obtained from herding and the cultivation of the soil in these valleys give abundant assurance of the success of this branch of industry in the Territory. Timber of large growth is abundant on the western mountain slopes and in some of the valleys. Five species of pine, two of fir, one of spruce, and two of cedar are found on the mountains; and in the valleys and cañons balsam, poplars, alders, and willows. None of the hard-woods, such as oak, hickory, beech, and maple, have been discovered in the Territory. In the upper portion of Deer Lodge Valley is situated a wonderful mound, composed of silicious and ferruginous deposits formed by a thermal spring. The mound is a truncated cone 30 feet in height, 100 feet in diameter at the base, and 30 feet at the top. In the winter the steam rises from a spring three feet in diameter in the summit, which is nearly at a boiling point, and gives the mound much the appearance of a large Indian lodge; very few such formations are found on the Pacific slope. Numerous hot springs have been discovered in different sections of the Territory. The expression of the scenery in some of the valleys of the western slope is exceedingly attractive; spurs and broken chains of mountains, lofty summits regularly dispersed, rising above and beyond one another, are all extremely interesting to view. The streams and small lakes which abound among the hills in this locality are all well supplied with trout.

On the eastern side of the Rocky Mountains is another basin, 150 miles long and 100 wide, watered by the Wisdom, Beaver Head, Stinking Water, Jefferson, Madison, the two Gallatins, and the Prickly Pear Rivers. In this basin and the corresponding one on the western side of the rocky range is contained nearly all the present population and agricultural and mineral wealth of the Territory. In the eastern basin lie the valleys of the Three Forks and Gallatin. They are about 40 miles long, with a width of 12 miles, and may be considered the garden of Montana. The climate is much milder than the latitude and elevation would seem to indicate, and the soil is unsurpassed for productiveness. A large extent of country in this region is under cultivation. Wheat is reported to yield 50 bushels to the acre; oats, 75 to 100; and potatoes, from 300 to 400 bushels to the acre, while garden vegetables have a mammoth growth. The soil is a dark vegetable mold of great richness and fertility, very tractable, and experience has demonstrated its wonderful productiveness. Nature has provided for the irrigation of districts where required in the conformation of the country. The plateaus are nearly level, and the mountain streams, which are frequent and never failing, are readily turned from their courses and made to wind along the base of the hills upon the outer limits of the table-lands, and thence distributed over nearly all the arable surface requiring irrigation.

There are immense tracts of this description which may be made available whenever the increase of population may require their cultivation.

The following are the aggregate values of the leading agricultural productions for 1869: Wheat, \$900,000; barley and oats, \$500,000; potatoes, \$1,000,000; hay, \$200,000; and dairy products, \$400,000.

The high altitude of the Territory, the dryness of the air, the character of the soil, retaining no poisonous exhalations, and the universal purity of its mountain streams, combine to give Montana a climate of wonderful salubrity. The atmosphere being comparatively free from moisture, renders the winters more agreeable than many of the climates in lower latitudes. The mean annual temperature of Clark's Fork, west of the Rocky Mountains, in latitude 48° , corresponds with that of St. Joseph, Missouri, in latitude 41° , and that of Bitter Root Valley, in 46° , is similar to that of Philadelphia, in latitude 40° .

The development of the mineral wealth of Montana is at the present time most important. In the production of gold this Territory is only excelled by California, and is justly entitled to the name of the Golden Summit. Veins of gold, silver, copper, and lead have been found in nearly all the explored mountain regions. The placer mines are widely distributed, and are found even on the summits of the mountains, differing in this respect from the California ranges, where the placers are confined almost exclusively to the gulches in the foot-hills and cañons in the mountains. The quartz lodes vary in thickness from a few inches to 50 and 60 feet, cutting through granite, talcose slate, sandstone, limestone, and many are as rich and extensive as any known in the history of mining enterprises.

The older placer mines have been yielding steadily during the past year, and a number of new ones have been discovered.

The mines on Cedar Creek and the adjacent streams in the western portion of the Territory are as rich as any on the continent. It is estimated that from 5,000 to 10,000 miners may be profitably employed in this locality. The opening of most of the placers has been attended with an outlay of a large amount of capital to furnish the needed water.

The county of Deer Lodge alone has 323 miles of ditch, with a capacity of 23,050 inches, miners' measurement, constructed at a cost of \$590,500; Lewis and Clark Counties have 111 miles of ditch, costing \$2,196,500. There are in all over 700 miles of these artificial water conductors in the Territory, constructed at a cost of \$3,500,000.

Montana, from its isolated position, far removed from machine shops, has been hindered in the development of its quartz mining. But as the country advances these hindrances will be removed. There are some 40 mills in the Territory for working gold ores, erected at a cost of \$1,000,000, some of which have met with fair success, and promise to make good paying and permanent investments. During the past year the quartz interests have materially improved. Patents have been issued to several claimants under the mineral act of July, 26, 1866.

On Alder Gulch, in the Jefferson basin, or in that region of the Territory east of the Rocky Mountains, the first extensive mining operations were conducted. This gulch has produced more gold than any other locality in Montana. The result obtained for the first three years after its discovery is estimated at \$20,000,000.

In 18 months from the commencement of operations a population of 10,000 had settled in this vicinity, causing the rapid building up of the towns of Nevada, Central City, Virginia City, and Summit City.

The larger portion of the placer mines of the Territory which have thus far been successfully developed are those only which, from their favorable location with reference to water, could be easily worked without first expending capital in water ditches. Sections already worked

over by this wasteful method may be reworked with approved hydraulic processes remuneratively. The principal mining districts are Dakota, Argenta, Summit, Kearsarge, Hot Springs, and Helena.

Near Bannock City the first quartz mill was erected in 1863. It was worked by water-power, and contained six stamps of 400 pounds each. The irons used in the mill were obtained from old wagons, and fashioned in a blacksmith shop. The lumber used in its construction was nearly all obtained from the same source. The enterprise proved highly successful pecuniarily.

It is estimated that \$100,000,000 of gold have been taken from the mines of Montana since 1863. The yield during the past year was \$12,000,000.

Bituminous coal of fair quality has been discovered along the Dearborn and Bighole Rivers and in the Mullen and Boseman Passes. Tin has been found in various localities on the surface, and the extent of territory over which it is known to exist leads to the belief that it will yet be discovered in paying quantities.

The richness of the silver ore of the Territory has been fully demonstrated. The lodes, however, owing to the difficulty in smelting the ores and in obtaining skilled labor, have not proved as profitable as was to be hoped.

The population of the Territory numbers about 21,000. Helena, the most important town, is regularly laid out and contains a number of fire-proof stone buildings, supports two newspapers, and has a population of 8,000. Stages connect it with Fort Benton and the various mining and agricultural towns of the Territory. The local land office is located at this point.

Virginia City has a population of 4,000, and Nevada City and Diamond City 2,000 each.

With fine agricultural resources, a salubrious climate, and mineral wealth inexhaustible, Montana takes high rank among the States and Territories of the Union producing precious metals.

The United States have now 86,836,819 38 acres to dispose of in Montana.

IDAHO.

By the act of Congress approved March 3, 1863, the Territory of Idaho was created. It had formed part of the Territory of Oregon, as organized by act of 14th August, 1848, and subsequently, viz., in 1853, a part of this region was included in the Territory of Washington. In the subsequent organization of the Territory of Montana, by act of May 26, 1864, the limits of Idaho were reduced, and still further curtailed in the organization of the Territory of Wyoming, by act of 28th of July, 1868. The present area of Idaho embraces 86,294 square miles, equal to 55,228,160 acres—a surface about equal in extent to that of the States of New York and New Jersey. It is estimated that the Territory contains 16,925,000 acres suitable, in their natural state, for agriculture, and that the grazing surface is equal to 5,000,000 acres. The timber region embraces 7,500,000 acres; the mineral tracts 8,000,000 acres, and nearly 14,500,000 acres of other lands may be reclaimed by irrigation and made available for agriculture and grazing purposes.

The portions of the Territory available for different industries, it is believed, when fully developed, will be found equal in productive capacity to either Michigan, Iowa, or Illinois. The lakes of Idaho cover over half a million acres, while the heavily timbered mountain region includes nearly a third of the surface of the Territory. The mineral de-

posits are found in the mountain regions, with the exception of some placer deposits, and are distributed in different parts of the Territory. Idaho extends through seven degrees of latitude, or 410 miles. The Territory is bounded on the north for miles by the British possessions, and expands to 257 miles at its southern limits; there it is bounded by Nevada and Utah; Oregon and Washington lie on the west; while the crest of the Bitter Root and the main chain of the Rocky Mountains form the eastern boundary, separating Idaho from Montana, Wyoming joining Idaho on the east for a distance of 135 miles. In the mountain system of this Territory the ranges or spurs and the high divides or water-sheds are named respectively after the streams or bodies of water descending the slopes along the bases or foothills or in the valleys below. From the Bitter Root and main chain of the Rocky Mountains, on the eastern border, subordinate ranges or spurs traverse the whole extent of the Territory. The Bitter Root Mountains are intersected, near the international boundary, by the Kootenah Range, which extends across the Territory. The waters on the northern slope, uniting in the valleys below, form a river, which flows into the Columbia. Proceeding south, the next range putting out from the Bitter Root Mountains is the Cœur d'Aléne Range, extending transversely across Idaho from east to west. South of these, and along the Clearwater and its tributaries, are the Clearwater Mountains. Along the Salmon River is the lofty, rugged, and snow-capped Salmon Range, while further up the Snake River are the Weiser, the Payette, the Bois , the Owyhee, Sand Tooth, and Wind River Ranges. The highest culminating crests of many of these ranges attain a great altitude, often rising far above the line of perpetual snow, while their slopes are furrowed with numerous beautiful mountain rills and streams, and alternately clothed with pine forests and luxuriant grasses.

The extreme northern section of Idaho is watered by the Kootenah River, and the region of country adjacent to the Cœur d'Al ne Mountains is watered by St. Joseph's River, the Pend d'Oreilles and Cœur d'Al ne lakes and rivers, the region immediately to the south being traversed by the Palouse River. The Snake River, the most important stream in the Territory, rises in the Wind River Range, in Wyoming Territory, flows by a circuitous, but general westerly, course of 450 miles across the southern section of the Territory, making a great bend to the northward near latitude 43  48' north, thence forming the western boundary of Idaho for a distance of over 150 miles. Upon its junction with the Clearwater it resumes its westward course until it unites with the Columbia River in the southwestern part of Washington Territory. This stream, besides numerous smaller ones, receives as tributaries in Idaho the Clearwater, Salmon, Weiser, Payatte, Bois , Malade, Bruneau, Raft, and Blackfoot Rivers. It is navigable from its confluence with the Columbia as far up as Lewiston, at the mouth of the Clearwater, but above that point for 150 miles to the mouth of Powder River, owing to the swiftness of the current and shallowness of the stream, navigation is difficult and often dangerous. Above the mouth of Powder, Snake River is navigable for light-draught steamers during the greater part of the year through the heart of Southern Idaho, to a point less than 100 miles to the line of the Central Pacific Railroad, north of Great Salt Lake.

In this Territory one of the leading and most striking objects of natural scenery is the Shoshone Falls on Snake River, near the one hundred and fifteenth degree of longitude, being 600 feet wide and rivaling the Falls of Niagara in volume and height of descent, while they are said to

be unsurpassed for magnificence of the surrounding scenery. Just above the Shoshone Falls the Snake receives the waters of Wood River, the North Malade, and Raft, all streams of considerable size, having their source in the spurs of the Sand Tooth Mountains, and flowing through fine fertile valleys from 60 to 100 miles long, and in width from 12 to 15 miles, clothed with luxuriant growth of nutritious native grasses. Wood River Valley embraces 400 square miles, the North Malade 500, and the Raft River 300 square miles, all containing fine agricultural and grazing land. The Owyhee Range, in the southwestern part of Idaho, constitutes a part of the divide between the waters flowing into Snake River and those of the basin of the Great Salt Lake, in Utah. The Owyhee River flows along the base of this range, uniting with the Snake after flowing a considerable distance in Oregon. The Bruneau River also has its source in the Owyhee Range, flowing north to Snake River. The valley of this stream, 70 miles long, embraces over 200 square miles of superior grazing land, some portions of which may be made to produce fine crops of cereals.

During the last winter thousands of cattle subsisted on the vegetation of this valley without artificial shelter, although the snow-fall on the mountains was unusually large. In the southwestern part of Idaho a small area falls within the region drained by Green and Bear Rivers. Some of the finest agricultural land in the Territory exists in the Green and Bear River Valleys, in the region of Fort Hall, on Snake River, and upon the upper tributaries of the latter stream in the southeastern part of Idaho. Nearly the whole area of the Territory is copiously watered. The highest spurs of the Bitter Root and Rocky Mountains on the eastern border, together with numerous peaks in the interior, are covered with snow during most of the year, which, melting and descending to the valleys below, supplies the streams and maintains nearly the same volume in all the rivers throughout the year. The water of these streams is clear, cold, and pure, abounding in choicest varieties of fish, and affords abundant motive-power for propelling machinery for the most extensive manufacturing establishments, and at the same time contain an ample supply of water for the purposes of irrigation, generally requisite throughout the Territory. The extreme northern expansion of Idaho embraces Kootenah County, copiously watered and well timbered, having a large area of fertile land.

The climate of this high northern latitude is not so favorable for agriculture. The region on the south, between the Kootenah and Cœur d'Alène Ranges, is well watered and timbered, possessing fine soil, well adapted for the growth of cereals. Shoshone County joins Kootenah County on the north, extending south to the Clearwater, is well watered and heavily timbered and adapted to the purposes of agriculture, with an extensive area of prairies, important as a grazing region. The most valuable timber in this section is the cedar, found on the mountain slopes.

Nez Perces County embraces nearly the whole region between the Clearwater and Salmon Rivers, in the heart of the Nez Perces Indian country, larger than some of the New England States, including the extensive and fertile prairies, some 80 miles in length, and in breadth from 10 to 15 miles, capable of sustaining a very large population.

The chief city in this section is Lewiston, in Nez Perces County, at the confluence of the Clearwater with Snake River, at the head of navigation from the Pacific. Lewiston is surrounded on the north and east by an extensive region rich in mineral wealth, and possessing valuable agricultural and manufacturing facilities. Idaho County is south of Nez

Perces, and embraces the Salmon Mountains, which contain some of the richest placer deposits yet discovered in the Territory, including large numbers of gold and silver bearing quartz lodes, which promise to yield immense fortunes. There is some fine agricultural land along the streams in this county, but the altitude of the largest portion of the county is unfavorable to agriculture. South of the Idaho is Boisé County, which stands next to the Nez Perces as a rich agricultural and mineral region, with the advantages of climate and natural position, being at the same time the most wealthy and populous.

This county is watered by the Weiser, the Payette, and the Boisé Rivers, and by the beautiful Payette Lakes. Long Valley, around Payette Lakes, is an upland prairie, over 90 miles in length and 15 to 25 miles broad, connecting with Round Valley, 50 miles long by 30 wide, while the Upper Payette valleys are nearly as extensive. Some of the finest agricultural lands are to be found in these valleys, which are fast settling up. This region presents superior advantages to those desiring to secure homes. Boisé Basin, in this county, consists of a depression in the surrounding hills and mountains, elliptical in form, some 25 miles long from north to south, and 18 miles wide from east to west, embracing all the mineral deposits here discovered. Mining has hitherto engaged nearly the entire attention of the population in this region, and in the aggregate has proved very profitable. This county is well timbered, and possesses an abundance of fine water-power. Weiser River, over 80 miles long, flows through a series of rich and beautiful valleys known as Indian Valley, Lower, Upper, and Weiser River Valleys. The greater portion of this county, however, is watered by Salmon River and its tributaries, along which the placer mines exist.

Ada County lies west and south of Boisé, and is strictly agricultural, being well watered by the Snake River, which flows along its southern and western border, and by Payette and Boisé Rivers coursing through the interior. That part of Boisé Valley in this county is over 80 miles in length, and of varying width, sometimes expanding to several miles.

The Great and Little Camas prairies lie in the Boisé Valley, and consist of upland plateaus, possessing rich soil, well adapted to the culture of cereals, fruits, and vegetables. There are 10,000 acres in cultivation in this county, yet nearly the whole area suitable for agriculture is claimed by settlers, who are rapidly extending their improvements, with a view of perfecting their title under the homestead and preemption laws.

Timber is here scarce, and the culture of the various kinds of hardwood has received some attention, all experiments in that direction having proved eminently successful. The Osage orange, for hedging purposes, thrives well in this Territory. In Idaho County a considerable area of the sage-brush land has been reclaimed and produces excellent crops, thus demonstrating that millions of acres of this shrub may be rendered valuable for agricultural and grazing purpose. Payette River, rising in the Payette Range, flows, by a general westerly course, 100 miles through a beautiful fertile valley, sparsely settled.

Alturas County lies south of the Idaho, and east of Idaho and Boisé Counties, within the boundaries of which are the mountains and spurs where the headwaters of the Boisé and the northern tributaries of Snake River have their sources. This county, though generally rough and mountainous, has fine agricultural land in the valleys; yet its attractive characteristic is its mineral wealth, as many rich ravines of gold, silver,

and other ores are here known to exist, some of which have been worked, yet only to a limited extent, during the past year.

Lemhi County lies on the eastern border of the Territory, north of Alturas, is watered by the Little Salmon, Loon Creek, and Lemhi River, and has limited area of valley land suitable for farming, its chief attraction being the rich mineral deposits now mined to a considerable extent. The counties of Oneida and Owyhee lie south of Snake River, the former in the southeast, and the latter in the southwestern part of the Territory. Owyhee contains a large area covered by the range of that name, in which are some of the most valuable deposits of silver. Owyhee County embraces also some fine agricultural land along the Owyhee River and its tributaries, and also along Bruneau River. The valley of the latter is a most attractive grazing region, possessing many advantages in natural location and climate. The reservation set apart by the President's order of July 30, 1869, for the Bannock, Boisé, and Bruneau bands of Shoshone Indians, is situated in Oneida County, and includes an area of 1,800,000 acres. It embraces some of the finest agricultural lands. A large proportion of Oneida County is broken and mountainous; the valleys, however, are generally well adapted to agriculture. Salt springs of great value exist in this county, with other springs highly charged with medicinal properties, some possessing remarkable curative qualities. A soda spring of considerable note is situated on Bear River in this county, just north of the southern boundary of Idaho. There are several thousand settlers in the southeast portion of Idaho, principally on Goose Creek and Marsh and Bear River Valleys. They have good farms and numerous herds of stock, and produce fine crops of cereals, and are represented as a prosperous community.

The town of Franklin, near the territorial line and in the vicinity of these settlements, has a population of over 1,000. Fertile land is generally distributed throughout the Territory.

Idaho presents great inequality of surface, between mountain and valley. It is, however, represented as mild for the altitude and latitude, as compared with regions of the same latitude east of the Rocky Mountains. In many of the valleys no artificial shelter is required during the winter, the pasture of the valleys being generally uncovered by snow.

The valleys which can be irrigated will be used for agriculture, while all others and the table lands, which for the most part abound in excellent nutritious grasses, will be appropriated for grazing purposes. Sheep and cattle require little other sustenance throughout the year than the grasses and herbage which in autumn dries upon the stalk into excellent hay. Stock-raising is a growing interest, and will be one of the most important branches of industry; sheep and wool growing justly attracting considerable attention, many portions of uplands, mountain slopes, and valleys being equal to the finest sheep-walks.

The climate is salubrious; the air pure, fresh, and invigorating.

The surface of Idaho attains an altitude of from 2,000 to 5,000 feet above the level of the sea, and owing to the limited rain-fall, irrigation is rendered necessary for the highest development of vegetation. In some places good crops may be produced during certain seasons without the aid of irrigation. The aridity of Idaho is considerably less than that of Utah and Nevada, while in the northern portion of the Territory the necessity of irrigation is still less than in the southern portion.

Mining is here yet in its infancy; the most serious obstacle being the want of capital. The placer deposits in some localities have been exhausted, yet this class of mines in several localities continues to yield

largely. New gold and silver-bearing quartz lodes are constantly brought to light, some of the mines being the richest in the country. A choice specimen of ore from the Atlantic mine in Yuba district, Alturas County, according to assay, will yield at the rate of \$25,000 to the ton. It is claimed that the average of this mine will be nearly \$6,000 per ton. The Poorman mine, on War Eagle Mountain, in Owyhee County, near Silver or Ruby City, is one of the best developed silver mines. Its average yield for 1866 was \$229 41 per ton, while the average product at the present time is \$126 24 per ton. There are several other mines of great value in the same region. Among these are the Ida Elmore, worked for gold, yielding \$140 per ton, and \$60,000 per month, the same as the Poorman. The Golden Chariot, on the same vein with the Ida Elmore and the Oro Fino, yields from \$40 to \$45 per ton. The Rising Star, in the Flint district at Owyhee, in this county, nine miles south of Silver City, yields \$280 per ton, as an average, from 160 tons of selected ore. The shipments of gold and silver from this district from the commencement of mining operations in August 1865 to July 1868, was at the rate of \$84,847 per month. During a portion of that time the operation of the mines was suspended. The average monthly shipments in the latter part of the period named reached \$100,000. The yield of the mines of Owyhee County for the past year is equal to that of the previous year. The surveyor general estimates the yield of the mines in the counties of Idaho, Lemhi, Shoshone, and Nez Perce, for the last year at half a million of dollars for each county, placing the yield of the Boise County mines at \$100,000 per month since the opening of the present mining season. The silver mines are confined to Owyhee County. The total bullion product of 1869 is estimated at \$7,000,000. About three-fourths of the entire product of the bullion of Idaho are gold, which at this time is nearly all derived from the placers. The placer deposits are decreasing, so that the quartz mines must be relied on for the more lasting results. Extensive deposits of coal and iron have also been discovered in the Territory, but as yet they have not been operated to any extent. These deposits will eventually contribute largely to the wealth of the country.

During the last fiscal year there were surveyed in Idaho 383,538 acres, increasing the area of surveyed lands to 894,511 acres. The area yet to be disposed of is 52,132,980 acres.

The population claimed for this Territory is 25,000 whites, 7,000 Chinese, and 6,000 Indians, the latter being at peace with the whites and living quietly on their reservations.

Boisé City, the capital, is situated in Ida County, on Bois  River, 50 miles from its mouth and 390 miles northwest of Salt Lake City. It is the seat of the United States surveyor general's office, of the district land office, and is the chief city of the Territory. Lewiston, the next place of importance, at the mouth of Clearwater River, is also the site of a United States district land office for the disposal of public lands. The other principal towns are Idaho City, Silver City, Malade City, Washington, Oro Grande, Leesburg, Salmon City, Elk City, Oro Fino, Pierce City, Placerville, Granite Creek, Pioneer City, Centerville, Florence, Middleton, Salubria, Fayetteville, Boonville, and Flint. The projected line of the Northern Pacific Railroad will cross this Territory on the north side of Salmon River. The construction of this great natural thoroughfare is being rapidly pushed forward. Its completion will give new impetus to settlement, as well as to the development of the vast stores of mineral wealth existing within its borders.

UTAH TERRITORY

lies between the thirty-seventh and forty-second parallels of north latitude and the one hundred and ninth and one hundred and fourteenth degrees of longitude west from Greenwich, being bounded on the north by Idaho and Wyoming, east by Colorado, south by Arizona, and west by Nevada. The Territory was created by act of September 9, 1850, out of country acquired from Mexico by the treaty of 1848, at Guadalupe Hidalgo. The original area of Utah was reduced by act of March 2, 1861, creating the Territory of Nevada, the acts of July 14, 1862, and May 5, 1866, increasing the area of Nevada, and by the act of July 25, 1868, organizing the Territory of Wyoming; so that the present extent of Utah is equal to 84,476 square miles, or 54,065,075 acres, the aggregate surface of the New England States. The principal range in the mountain system of Utah is the Wahsatch Range, extending across the Territory from northeast to southwest. The Uintah Mountains stretch along the south boundary of Wyoming, joining the Wahsatch, to which they are subordinate. The Roan or Book Mountains lie partly in Utah and partly in Colorado between Grand and White Rivers. The Little Mountains lie west of Green River, and extend northwest and southeast between White and Uintah Rivers, joining the Wahsatch Range. The Sierra Lasal lies southeast of Grand River, near the east boundary, while south of the last mentioned are the Sierra Abajo and Orejos del Oso. The Sierra Tucan and Sierra Panoche lie near the south boundary, the former east and the latter west of the Colorado of the West. Southeastern Utah is less mountainous than the northeastern, and consists of extensive undulating arid plains. Its vegetation is wild sage and occasional tufts of grass, being as yet but imperfectly explored. All the ranges and spurs west of the Wahsatch Mountains in the Great Basin are disconnected with that range. Among these are the Thomas, Iron, Guyot, Goshoot, Pijarajabi, Oquirrh, and Raft River Mountains, whose highest culminating crests frequently rise above the snow line. Besides these mountains there are other spurs and ranges attaining considerable altitude, and constituting the source of numerous mountain streams. The plains of the Great Basin generally lack moisture, producing only the sage brush, desert weed, with occasional tufts of sand and buffalo grasses; when, however, the earth possesses sufficient moisture, it produces luxuriant growths of nutritious grasses and wild sage. Along the shores of the lakes, in narrow valleys coursed by running streams, in the neighborhood of springs along mountain bases, and in narrow belts watered by mountain streams, the moisture is sometimes sufficient to produce good crops without the aid of irrigation. The Great Basin west of the Wahsatch, and including the western part of Utah, has no outlet to the ocean. The streams, with their source in the mountains, generally debouch into lakes. The lakes here having no visible outlet are strongly impregnated with alkaline substances. The Great Salt Lake is the most considerable body of water in Utah—lies in the northern section near the western foot-hills of the Wahsatch, extending 100 miles from northwest to southeast, with average width of 50 miles, and receives as tributaries Malade, Bear, Blue Spring, Ogden, Weber, and the River Jordan, draining a considerable area. A chemical analysis of the waters of Great Salt Lake shows them to contain 20 per cent. of common salt and 2 per cent. of sulphate of soda and chloride of magnesium. Its specific gravity is given as 1.17, slightly varying with the seasons because of the volumes of fresh water the lake receives from the mountains in the spring, caused by the melting of the snows in the

mountain gorges. The shores of this lake present an irregular outline, while the surface is interspersed with rocky islands, of which Antelope, Frémont, and Carrington are the largest. Lake Utah, lies south of Great Salt Lake, with which it is connected by the River Jordan—in length 45 miles. Lake Utah is a beautiful sheet of pure fresh water 39 miles long and 10 in width, abounding in fine fish. It is surrounded on three sides by rugged mountains and lofty hills, with a broad grassy valley sloping to the water's edge, opening to the northward, through which flows the Jordan. Utah Lake receives the waters of Spanish Fork, Provo, or Timpanogas, and Current Creek. Sevier Lake, situated 100 miles southwest of Utah Lake, is the next in size, receiving the waters of Sevier River and its tributaries. The latter stream is nearly 200 miles in length, and receives the San Pete River, over 50 miles long, flowing through one of the richest agricultural valleys in Utah. Preuss Lake, nearly as large as Sevier, on the line between Utah and Nevada, receives the waters of Beaver and other creeks. Little Salt Lake, 60 miles south of Sevier Lake, collects the waters from the Wahsatch and Iron Ranges, and is formed mostly by the melting of mountain snows and ice. Fish Lake, 15 miles long by 10 wide, between the Wahsatch and Iron Ranges, is a beautiful sheet of fresh water, having an outlet through a branch of Sevier River. All the lakes in Utah, in common with Nevada, which have no visible outlet are more or less impregnated with alkaline substances. The Great Basin consists of a series of valleys formed by ridges and mountain ranges, each valley being disconnected and having its own level and water system.

It is not unfrequent to find in the early morning a beautiful brook of clear, cold water whose line can be traced for miles into the plain by the scanty fringe of willows along its banks, but whose bed will be found dry in the evening from evaporation. The ground is covered in many places with efflorescence of alkaline salts, formerly in solution in the waters which collect during the wet season. Wherever salt is required in chloridizing the sulphureted silver ores for amalgamation, it is shaved from the ground in the salt marshes and packed in sacks for transportation. The general elevation of the valleys of the Great Basin is from 4,000 to 6,000 feet above the level of the sea, while the mountain ranges rise from 4,000 to 7,000 feet higher. The region east of the Wahsatch Range is more copiously watered, rugged, and mountainous than that west of the range. The highest mountain peaks of Utah attain an altitude of from 6,000 to 13,000 feet above the level of the sea, the more prominent peaks rising above the snow line. Nearly all the region east of the Wahsatch Range is drained by the Colorado of the West, which river is formed by the junction of Green and Grand Rivers, near 38° 15' north latitude. The region drained by Green and Grand Rivers, with their numerous affluents, includes Western Colorado, Southwestern Wyoming, and Eastern Utah, embracing a region of over 100,000 square miles. The principal affluents of Green River in Utah are the Uintah, Duchesne, White, and San Rafael, all streams of considerable volume, having their source in and flowing through the mountain region. In this portion of the Territory the rain falls principally at the source of the streams, and as they nearly all flow through deep and precipitous cañons, the water is not so available for the purposes of irrigation. In some instances, as soon as the lower valleys or plains are reached, the water expands into broad, shallow streams, running frequently in beds but little depressed below the general surface of the country, and frequently dividing their waters into numerous rivulets coursing over the surface of broad, fertile meadows, irrigating the soil

and producing luxuriant vegetation. At the junction of the Green and Grand Rivers the Colorado of the West passes through a cañon whose vertical sides rise 1,200 feet above the bed of the river. It flows southwest, receiving the Rio San Juan and crossing the southern boundary near the one hundred and eleventh meridian west from Greenwich, passing through a series of cañons whose vertical walls rise from 500 to 1,500 feet above the river bed, while the exterior banks of the cañon attain an altitude of from 2,500 to 4,000 feet. The river passes through these remarkable cañons, over 400 miles by its meanderings, into Arizona and Nevada, to Colville, and abounds in rapids and cataracts, with magnificent natural scenery. The walls of these cañons are composed principally of limestone and sandstone. At the foot of Cataract Cañon a beautiful variety of marble exists, 1,300 feet thick. In the valley of Green River there is an area of over 7,000 square miles, nearly as large as the State of Massachusetts, of high fertile land, clothed with luxuriant indigenous grasses. It is nearly all unoccupied, although possessing some superior advantages for sheep and wool growing. A considerable portion of Utah is clothed with fine grasses, and particularly adapted to this branch of industry. There are now extensive herds of fine bred sheep feeding upon the indigenous pastures. Buffalo or gama grass is the prevailing species on both sides of the Wahsatch Range in Utah. Sand grass prevails to some extent in the valleys, and bears a small black seed, and when ripe has the appearance of buckwheat. It grows in bunches as if planted in hills, clings to its seed when ripe with the greatest tenacity, and is very nutritious. It is a favorite custom of the herdsmen of Utah to drive their stock high up on the mountain slopes during the summer season, where the herbage possesses greater freshness, and reserve the valleys for the winter season, where the temperature is milder. In the northern sections of the Territory numerous herds are pastured in the mountain ranges east of the Wahsatch, but upon the approach of winter the herds are driven over the range into the Salt Lake Valley, where but little snow falls, the temperature is milder, and pasturage more abundant. Stock-raising is here rendered profitable, by the fact that cattle and sheep in winter require but little shelter other than that afforded by the valleys, and no food except the wild sage and indigenous grasses. In the valleys the climate is generally mild and healthy, with light snow-fall, while high on the mountain slopes the winters are severe and the snow-fall more abundant, the melting of which during the following spring and summer furnishes an unfailing supply of water for the streams and lakes. Rain is abundant in the valleys and in the Great Basin from October to April, the weather during the rest of the year being dry and hot. In summer the mercury often ranges high during the day, but the nights are invariably cool and refreshing. Spring opens in May, and cold weather in the valleys rarely sets in until November, but occurs earlier in the more elevated sections.

The surveyor general estimates the area under cultivation in Utah at 140,000 acres, of which 100,000 acres are planted in cereals, with an average product of 23 bushels wheat, 38 bushels of barley, 31 bushels oats, 20 bushels corn, 135 bushels potatoes, 265 bushels beats, and 334 bushels carrots. The average product and aggregate under cultivation is placed somewhat higher by other well-informed parties. At the last territorial agricultural exhibition, in October 1869, a special premium was awarded for African bearded wheat grown at Kaysville, in Davis County, along Great Salt Lake, on beach land, without the appliance of artificial

irrigation. The yield was 30 bushels per acre, and the wheat produced 47½ pounds of superfine flour to the bushel of grain.

The extent of meadow land is placed at 30,000 acres, and the average yield at 1½ tons of hay per acre. Sorghum yields 79 gallons per acre, and the cotton produced in the valley of the Rio Virgin is estimated at 150 pounds per acre. For several seasons the agricultural interests of Utah have suffered from the frequent ravages of the grasshoppers.

The great expense attending irrigation is compensated in most instances by a very large yield over that of those sections where the artificial application of water is not essential to the highest development of vegetation. Fifty and 60 bushels of wheat have been gathered from a single acre; one instance having been reported in which the yield reached 100 bushels. Barley, rye, oats, buckwheat, flax, and all the various kinds of root crops have been produced, with the most gratifying results. In regard to the culture of corn, the nights are generally too cool for large crops, except in Salt Lake Valley and in the valley of the Rio Virgin, in the southwest. The culture of the various kinds of fruits of the north temperate zone, and some others, in Utah have been attended with the most satisfactory results. There are about 1,000 acres in apple orchards, 1,200 acres in peach orchards, besides other kinds of fruit.

Among the fruits on exhibition at the last annual agricultural fair were figs, pomegranates, and other tropical fruits grown in the valley of the Rio Virgin, and apples, pears, peaches, plums, and grapes from other sections of Utah, all of fine size and excellent flavor. Large quantities of fruits, vegetables, and berries are annually dried or canned for shipment to the mining regions of Wyoming, Nevada, Idaho, and Montana. The culture of the tea plant has been attempted on a small scale, but no report has been received of results. Numerous experiments have been made in the culture of silk, and the country and climate are believed to be well adapted to this interest.

In the absence of the mulberry, in some instances the worms have been subsisted for two successive years on Osage orange leaves, the cocoons reeling an excellent quality of silk. In the valley of the Rio Virgin, around St. George, Santa Clara, and Toqueville, the attention of the population is chiefly directed to the culture of the grape for wine.

The area of Utah susceptible of irrigation by means of canals and ditches approximates 400,000 acres, while, by means of artesian wells and other agencies, it is believed that many thousand acres more may be made to produce abundant crops. In 1867 there were 93,799 acres of irrigated land. It is estimated that the expense already incurred in the construction of irrigating canals and ditches approximates \$1,250,000, while those now in progress of construction will require an additional sum of at least \$250,000. The first lodgment in the Territory as a permanent settlement was made in 1847 by 143 Mormons, since which time, through systematic perseverance and energy, they have founded the prosperous city of Salt Lake and many other towns and villages, opened beautiful and productive farms, and laid the foundation of extensive agricultural and manufacturing interests. All the principal settlements exist along the western foot-hills of the Wahsatch Range and in the valley of the Rio Virgin.

The indigenous timber of Utah consists of quaking ash, cedar, spruce, pine, fir, and similar evergreens on the mountain slopes and foothills, while extensive copses of willow, box-elder, cottonwood, and dwarf ash grow occasionally along the river bottoms. The aggregate area of the timber lands is estimated at 4,000 square miles in Utah, but there is a

deficiency in the native varieties of hard wood ; but since the settlement of the Territory attention has been directed to its culture in the valleys and on the mountain slopes. The young planted forests are growing finely, showing this class of timber may be successfully cultivated.

The capital invested in manufactures is \$1,630,000, mainly employed in flouring, woolen, cotton, saw, and paper mills and iron furnaces. There are also establishments for the manufacture of leather, agricultural and mechanical implements, boots and shoes, furniture, pottery, jewelry, straw goods, and salts. The manufacture of woolen fabrics is already an important interest, and two more extensive establishments are in process of construction. The woolen goods include doeskins, tweeds, linsey, flannel, and blankets, which are claimed to be equal to those imported. The mountain streams afford ample water-power for manufacturing purposes. The coal in the valleys and timber in the mountains will leave no scarcity of fuel in Utah either for domestic or manufacturing purposes for a long period to come.

The mineral deposits include precious and useful metals, among which are gold, silver, copper, iron, coal, salt, lead, zinc, alum, borax, saleratus and sulphur. Vast deposits of iron ore, of superior quality, occur in various places. In some instances founderies and manufactories have been established near these mines for the production of agricultural and mechanical implements. The most extensive deposits of iron ore occur in the southwestern part, in Iron Mountain, in the vicinity of Little Salt Lake. An establishment has been erected here for the reduction of the ore, and it has been demonstrated that a fine quality of gray cast iron can be produced. Arrangements are being made to manufacture this iron on an extensive scale. The deposits northeast of Evanston, near the Union Pacific railroad, are at the present time the most favorably located. The ore is red oxide, assaying from 20 to 60 per cent. of iron, and, although somewhat refractory on the surface, it is believed that a superior quality will be obtained at a small depth. This ore is reduced by coal from Rawling Spring in Wyoming, which is free from sulphur and found to be admirably adapted for the purpose, and can be delivered by rail within short distance of the mines.

The extension of the public surveys west of Little Salt Lake in Iron County, during the present season, revealed the existence of a ridge of magnetic iron ore, nearly pure. Coal of good quality exists at the foot of the Wahsatch, in San Pete County, 21 miles southeast of the town of Nephii, and at Coalville, and Echo Cañon, in Summit County. It also occurs in Beaver and Iron Counties convenient to the iron mines, where doubtless it will be found available in the reduction of the rich deposits of iron ore in these localities. This coal is all bituminous in quality, and burns with a bright yellow flame, emitting intense heat. It is extensively mined, being used in manufacturing establishments and for domestic purposes in the principal cities and towns. The city of Salt Lake is mainly supplied with coal from the coal fields of Weber Cañon, at an average price of \$11 per ton, wood at the same time being \$8 per cord. Extensive beds of sulphur occur at Millard City. A superior article of salt is manufactured from the waters of Great Salt Lake, in the vicinity of the city of Salt Lake. The localities are numerous where salt can be manufactured. Rock salt is abundant in Salt Creek Cañon and in various sections of the Wahsatch range. Building stone of almost every variety is here found, and is extensively used in the construction of buildings of all kinds. Utah contains extensive deposits of the precious metals, the southwestern part being especially rich in argentiferous ores. The mining districts most extensively de-

veloped are in Little Cottonwood Cañon, on the western slope of the Wahsatch Range, twenty miles south of Salt Lake City. Several mines have been profitably worked here, the ores being mainly argentiferous galena, associated with carbonate and sulphuret of copper and antimony. During the year ending June 30, 1870, 600 tons of this ore were shipped to San Francisco for reduction, and sold at an average of \$150 per ton, adding \$50,000 to the wealth of the Territory. The product of these mines is constantly increasing and the yield of the present year is estimated at 7,000 tons. Four well-developed mines on the western border of Pinto County, convenient to fuel and water, have produced ore assaying per ton as follows: Curry mine, \$880; Miners' Relief, \$160; Bully Boy, \$132; and Yankee Blade, \$110. New discoveries of argentiferous galena are constantly being made in Rush Valley, between the Guyot and Oquirrh Ranges, the veins averaging three feet in width, one shaft having been sunk 160 feet. Reduction works have been erected near these mines capable of reducing 15 tons per week. These works, during a recent run of 36 hours, produced 5,000 pounds of bullion, valued at \$300 per ton. Mines have also been recently discovered in Tintic Valley, west of Utah Lake and 60 miles from Salt Lake City. The surface ore of one of these yielded in silver from \$40 to \$100 per ton. Numerous and extensive ledges of silver-bearing rock are found in Bingham Cañon, in the Oquirrh Range, southwest of Salt Lake City, but we have received no data as to their development. The gold-bearing quartz lodes which have been discovered in the Wahsatch Range have not been developed.

The total valuation of the real and personal property of Utah for 1869 is reported as \$11,390,606.

Since the date of our last report, the Utah Central Railroad, 137 miles in length, connecting Salt Lake City with the Union and Central Pacific Railroads at Ogden, has been completed, at a cost, including rolling stock, of \$1,500,000. Salt Lake City is thus connected with the railroad system of the United States, and placed in direct communication with the great commercial cities of the Union, east and west, and with Europe and China. The completion of this road, and the continental thoroughfare with which it connects, have given new impetus to the settlement and development of resources.

During the fiscal year ending June 30, 1870, there were surveyed 685,636 acres, which, together with the work now in progress, includes the arable land between the towns of Fillmore and St. George, and along Beaver River in the southwest; also along the line of the Union Pacific Railroad, in Parley's Park, and in the valleys of Bear and Weber Rivers, in the northern section. During the same period the exterior lines of surveys have been extended to include the valleys at the base of the mountains in the vicinity of the cañons of Bingham, Big and Little Cottonwood, and those leading to Rush Lake Valley, with a view to the survey of the agricultural and mineral lands in those localities. The surveying operations were inaugurated in Utah in 1855 and continued up to 1857, during which period there were surveyed 2,425,239 acres.

From that time until 1868 the extension of the public lines was deferred, except certain vacated Indian reservations, as authorized by the act of May 1854. The surveying districts of Utah and Colorado were consolidated by the act of July 16, 1868, and subsequently Utah was again erected into a separate surveying district, and the surveys renewed. The whole area surveyed in Utah up to the close of the fiscal year ending June 30, 1870, is equal to 3,211,508 acres, including the

greater part of the arable lands in the valleys of the streams of the Great Basin; also, considerable areas in the northeastern and southwestern sections, including those localities containing the largest number of settlers and most desirable agricultural tracts.

Since the opening of the district land office there have been taken up by actual settlers an aggregate area of 208,072.93 acres, of which 59,670.02 acres were disposed of since the close of the last fiscal year, and there are 48,749,957.45 acres yet to be disposed of, embracing extensive tracts of fine agricultural lands, scattered in almost every section of Utah, with hundreds of thousands of acres of excellent grazing tracts in the valleys and on the mountain slopes on both sides of the Wahsatch Range, where horses, sheep, and cattle can be maintained at small cost, and where they will thrive as well as in almost any other section of the United States.

THE STATES AND TERRITORIES OF THE PACIFIC SLOPE.

Our extreme occidental domain, whose shores are bathed by the Pacific Ocean, comprises the Territories of Alaska and Washington and the States of Oregon and California. The first-named, extending from the Frozen or Arctic Ocean on the north, in the seventy-first degree of latitude, to British Columbia on the south, in the parallel of $54^{\circ} 40'$, has a sea-coast, exclusive of bays and islands, of 3,600 miles. Washington Territory and the two last-named States, extending from British Columbia on the north to the Republic of Mexico on the south, have a continuous shore line of 1,405 miles, making a total west and northwestern coast line within the borders of the republic of 5,005 miles. These States and Territories embrace an aggregate area of 931,639 square miles, which, being apportioned among their respective constituted boundaries, gives to Alaska 577,390; Washington, 69,994; Oregon, 95,274; and California, 188,981 square miles, a surface larger than the United Kingdom of Great Britain and Ireland, France, Austria, Prussia, and Spain combined, and greater in extent than the aggregate areas of the thirteen original States forming the republic.

The geographical position of the region lying between the forty-ninth and fifty-second parallels, in reference to the commercial world, is most advantageous. The mind can scarce grasp and comprehend the benefits to be derived by this nation from the possession of a territory so valuable, not only in respect to climate, agricultural resources, and mineral wealth, but also as regards commerce.

San Francisco, situated in direct line from the center of Europe to the center of Asia, and in view of the consummation of the grandest scheme of modern achievement, the completion of the Transcontinental Railway, the commerce of the world in direct line belting the center of the republic is secured.

A brief description of the resources of each of the above-named political divisions is now proposed to be given, beginning with

ALASKA.

This Territory is bounded by the Arctic Ocean on the north, the Pacific Ocean, Behring's Sea and Strait on the west and south, and the British Possessions on the east.

Until a very recent date all the known facts in regard to the climate and resources of Alaska, formerly known as the Russian American Possessions, were obtained from researches made by various exploring expedi-

tions employed by Russian authorities, and from the expedition sent out by the government of Great Britain in 1848, in search of the missing vessels of Sir John Franklin, which inaugurated the most flourishing era of arctic exploration, and has added very greatly to our knowledge of the northern regions. By the recent investigations of scientific corps our information concerning this remote political member has been much increased, though a wide field still remains open for further investigation.

Although provision has been made by law for the collection of the national revenue in the Territory, no territorial organization has yet been perfected, nor has any provision been made for the disposal of the public lands to settlers or otherwise.

The North Pacific rivals its southern portion in the number and size of its islands. These embrace, off the coast of Alaska, a total area of 31,205 square miles. The magnificent group of 1,100 islands which guard the American coast from the southern boundary of the Territory to Cross Sound, in latitude $58^{\circ} 25'$, has received the cognomen of Alexander Archipelago, in honor of the Emperor of Russia. These situated southeast of the Peninsula of Alaska, between longitude 151° and 158° , are known as the Kodiak Archipelago, from the name of the principal one of the group. The great extent of water lying between the latter group and the Alexander Archipelago has been named the Gulf of Alaska.

The great chain of islands between longitude 163° and 188° bears the general name of Aleutian Islands, from the term Aleuts, applied by the Russians to their original inhabitants.

Among the islands in Behring Sea are the Prebyloff Group, in latitude 57° and longitude $169^{\circ} 36'$. They comprise St. Paul, St. George, Walrus, and Beaver. These are the fur-seal islands.

The innumerable bays, channels, sounds, and straits penetrating into the interior of Alaska from the Pacific Ocean and Behring Sea afford many excellent harbors and anchorages. Among these in the southeast portion are Fayakhousite, Port Gardner, Etolin, Kygani, Parloff, Hamilton, and Sitka harbors. At Fayakhousite the United States military post of Fort Tongas was established in 1867. In clearing the timber for this post a magnificent growth of yellow cedar trees, eight feet in diameter and 150 feet in height, were found. The shores in the vicinity of all these harbors, which are generally low, are said to abound in timber and coal of excellent quality, and would be well adapted for agricultural purposes if cleared of wood.

Sitka Harbor, on which the town of Sitka is situated, is very contracted, and contains two anchorages, the eastern and western; numerous buoys have been laid down by the Russian American Company, to which vessels usually moor. The mean rise and fall of the tide is 7.8 feet. About nine miles south of Sitka are the rapids which connect the waters of Deep Lake with Lake Bay. At these rapids are extensive salmon fisheries. The surplus over the consumption amounts annually to 500 or 600 barrels. The town of New Archangel, on Baranoff Island, now called Sitka, from the Indian name of the bay on which it is situated, contained in 1867 about 1,000 inhabitants, of whom 350 were Russians, and the remainder Aleuts or Creoles. Since the Territory was ceded to the United States, but few of the former now remain; nearly all have returned to Siberia or Russia. Back of the town of Sitka are two mountains. The nearer one is rounded and covered with trees, and the sharp snowy peak of Vostasia, immediately behind it, gives the appearance of a single mountain when viewed from the town.

Vostoria is 3,260 feet in height. Sitka was the capital of the Russian colonies in America; it is in latitude 57° and longitude 135° . The distance by steamer from San Francisco to Sitka by the inner passage, between the Alexander Archipelago and the coast of British Columbia, and Alaska, is 1,647 miles. The town has about 120 buildings, constructed mostly of logs, and painted a dull yellow, with metal roofs painted red, and with the emerald green spire of the Greek church projected against the dark evergreens of the adjacent mountains, presents an extremely picturesque appearance. It is quite unlike any other town in America. The principal buildings are the late governor's house, the Greek church, hospital, and counting-house. The climate of Sitka is disagreeably moist, and much cloudy weather makes it gloomy. However, there are many days, when the sky is clear and the sun is out, that are exceedingly pleasant. The islets with which the bay is studded are covered with timber to the water's edge, and many of the views in the harbor are very attractive.

Baranoff Island, on which the town is situated, is comparatively unexplored. The dense forest and moist soil, as well as the mountainous character of the country, render exploration both difficult and dangerous. The ocean coast north of Cross Sound, the end of the Alexander Archipelago, to Cape Fairweather, is steep and woody, terminating in mountains of 5,000 or 6,000 feet in height, densely clothed with forests. These forests are said to be full of berries, and bears, martins, and squirrels are plenty.

Continuing north from Alaska Peninsula to Cape King-egan, the most western land of the American continent, situated in latitude $65^{\circ} 33'$ and longitude $167^{\circ} 59'$, many excellent harbors are found, affording safe anchorage for vessels during summer and winter. The whole northern coast is low, without good harbors, and fringed with numerous shoals.

The watershed of Alaska bordering on the Pacific is much smaller than that of Behring Sea. In most places the mountains approach closely to the sea-shore, and the water discharged by the rivers is collected far inland, and forces its way to the sea through some narrow pass or perpendicular cañon. Much of the rain-fall is congealed on these lofty summits, and finally reaches the sea, by slow degrees, as a glacier torrent.

The principal rivers emptying into the Pacific are the Chilkah, Alekh, and Copper. The Kreskoguine River, the second largest in Alaska, and the longest whose watershed is confined to the Territory, empties into Behring Sea, and has a total length estimated at 500 miles. The Yukon River, rising in the Rocky Mountains of the British possessions, flows in a southwesterly course through Alaska, empties into Behring Sea in latitude $62^{\circ} 30'$, through several mouths, forming a delta. This river is one of the largest in the world, being larger than the Ganges or the Orinoco, and about the size of the Danube. Its length is 2,000 miles, of which three-fourths are navigable.

To the great currents which exist in the North Pacific and Behring Sea is due the mild climate of the southern and middle portion of Alaska, as well as that of the whole northwest coast of the continent, as compared with the northeast coast.

The gulf stream of the Pacific is known to the Japanese as Kuro Seiro, or Black Stream, from its color as compared with the other waters of the Pacific. It divides on the western extremity of the Aleutian chain. One portion of it sweeps eastward, south of the Aleutians, and, striking the shores of the continent, is deflected southward. It brings a warm, moist atmosphere, which is condensed on the snowy peaks of

the Coast Ranges, and causes the remarkable rain-fall which characterizes the coast as far south as the southern boundary of Oregon.

The other and smaller portion passes between Commander's Island and the extremity of the Aleutians northward, through Behring Strait. Hence no ice floats southward through the strait from the Frozen Ocean. Large masses of ice may be seen steadily sailing northward through the strait, a knot and a half an hour against a very stiff breeze from the north.

The Coast or St. Elias Range of mountains in Alaska contains the highest peaks and most of the volcanoes. It extends along the whole northwest slope, from the Bay of San Francisco, California, to the Peninsula of Alaska. Among the highest of these are Mt. St. Elias, 16,000, Mt. Fairweather, 14,000, and Mt. Crillon, 13,500 feet; and on the Alaska Peninsula are Iliamna, 12,000, and Redoubt, 11,000 feet, both volcanoes, which, however, show but little symptoms of activity.

The aborigines of the Territory comprise the Indians, of which there are numerous tribes, bearing distinct tribal names, and the Ovarian stocks, which embrace the Jennit or Eskimo Aleutians, and the Tuskis. The former inhabit the interior of the country, whilst the latter, the Ovarian, occupy the coast. They number about 28,000.

Alaska may properly be divided into three distinct districts, materially differing from each other in climate, agricultural capacity, and physical characteristics, viz: The northern, termed the Yukon District, the middle, or Aleutian, and the southern, called the Sitkan District. The former is bounded on the north and west by the Arctic Ocean and Behring Sea, on the south by the Alaskan Mountains, and on the east by the British boundary line. The surface of this district, in the vicinity of the Yukon River, varies from low, rolling, and somewhat rocky hills, usually easy of ascent, to broad and rather marshy plains, extending for miles on either side of the river, especially near its mouth. There are at present no roads in this region, except an occasional trail. The Yukon and its tributaries form the great highways of the country. Over a large extent the soil is a rich alluvial, composed of very fine sand, mud, and vegetable matter, brought down by the rivers, and forming deposits of great depth. It is usually frozen at a depth of three or four feet in ordinary situations. On the shores of Escholtz Bay, Kotzebue Sound, are found continuous bluffs, or banks, 30 to 60 feet in height, of apparently solid ice. These banks, strange to say, are covered with a layer of soil and vegetable matter, where, it has been stated by a renowned botanist, "herbs and shrubs are flourishing with a luxuriance only equaled in more favored climes." Recent examinations of these bluffs have been made, and it has been found that at various points on the top of the bank, more or less removed from the shore, vegetable matter, mixed with the ice, exists below the surface. The lesson that the agriculturist may learn from this remarkable formation is, that a healthy and luxuriant vegetation may exist in the immediate vicinity of permanent ice, bearing its blossoms and maturing its seeds as readily as in situations apparently much more favored, and hence we may infer that a large extent of territory long considered valueless may yet furnish to the trader, fisherman, or settler, if not an abundant harvest, at least an acceptable addition to his fare of fish and game.

The climate of the Yukon district in the interior (as is the case on the whole Pacific slope) differs from that of the sea-coast. That of the coast is tempered by the vast body of water contained in Behring Sea, and the southern currents bringing warmer water from the Pacific, mak-

ing the winter climate of the coast much milder than that of the interior. The summers, on the other hand, from the quantity of rain and cloudy weather, are cooler and less pleasant than those of the interior. The months of May, June, and part of July are delightful; sunny, warm, and clear. The growth of plants is rapid in the extreme. The snow has hardly disappeared before a mass of herbage has sprung up, and the spots which a few days before presented nothing but a white sheet are teeming with active vegetation.

At Fort Yukon, 1,200 miles from the mouth of the river, in latitude $66^{\circ} 34'$, the mean temperature in summer is 59° , and in winter 23° . At St. Michael's, on the coast of Norton Sound, in latitude $63^{\circ} 28'$, the mean temperature in summer is 53° and in winter 8° . The mean annual temperature of the district is estimated at 25° . The real opportunity for agricultural enterprise cannot be deduced from annual mean temperature alone, but is dependent on the heat of the summer months and their duration. In the scorching sun of the arctic midsummer vegetation attains an almost tropical luxuriance. At Fort Yukon the mercury at noon, not in the direct rays of the sun, has indicated 112° .

Nearly the whole of the Yukon district is well supplied with timber; the largest and most valuable of which is the white spruce, birch, and Oregon pine. The willow and alder are abundant. On the coast of Norton and Kotzebue Sounds the Kentucky blue grass grows luxuriantly, averaging at least three feet in height. Grain has never been sown to any extent in the Yukon district. Barley has been found to mature in the southeastern portion of the district, through the straw was very short. Turnips and radishes flourish extremely well. Potatoes were successful in the interior. With proper protection in winter stock-raising should succeed well in a large portion of this region, fodder being abundant. There are no fruit trees in this district suitable for food. Small fruits, such as red and black currants, gooseberries, cranberries, and raspberries, are found in great abundance. The Aleutian, or middle district, comprises the Aleutian Islands and part of the peninsula of Alaska. The climate of this district is moist and warm. The snow line is 3,510 feet above the sea. The greatest cold recorded is zero of Fahrenheit, and the highest point reached by the mercury is 77° . From October to April the prevalent winds are from the north and west, and from April to October from the south and west. The thermometer is lowest in January and March, and highest in July and August. The greater number of clear days occur in January, February, and June. The winters are for the most part mild and pleasant, but during the summer there is much rainy and gloomy weather. The temperature of this portion of Alaska is very similar to that of Northern Scotland, a country which has been for centuries under cultivation. The mean annual temperature of Northern Scotland varies from 42° to 48° , and that of the Aleutian district from 36 to 40° . At Drymen, in Shropshire, on the west coast of Scotland, 205 days during the year were found in an average of 14 years to be more or less rainy; the annual rain-fall being 43 inches. At Oonalska, Alaska, the average of rainy days in 7 years was 150, and the average rain-fall, 40 inches. From this it may be inferred that the productions of this country, which agrees nearly in temperature and rain-fall, will compare favorably with those of Scotland. The islands contain many lofty mountains, many of them volcanoes, some still evincing activity by smoking or emitting steam.

Between them and the sea are rolling and moderately inclined hills and meadows. The soil is much of it rich, consisting of vegetable mold

and dark-colored clays, with here and there light calcareous loam, formed of decomposed rocks, rich in tertiary fossils. The inhabitants of this district, principally Aleuts, are faithful and docile, but indolent and improvident. They make good sailors, but poor farmers; their attempts, however, at agricultural pursuits have been principally under the direction of Russian masters. There is no timber on the Aleutian Islands of any kind larger than a shrub. The grasses in this climate, warmer than that of the Yukon district and less humid than the Sitkan, attain an unwonted luxuriance.

The good and available lands of this district lie chiefly near the coast, formed by the uniting and mingling of the detritus from mountain and valley with the sea-sand, which forms a remarkably rich and genial soil, well suited for garden and root crop culture. Although the agricultural capacity of this region has been as yet but little tested, it is believed that good crops of the cereals common to the temperate latitudes could, under the thrifty hand of enterprise, be successfully cultivated here.

The Sitkan district extends from the southern boundary of the Territory, including the mainland and islands, to the peninsula of Alaska.

With the exception of the northern part, this district furnishes but a small amount of arable land level and suitable for cultivation, the remainder being rugged and mountainous in the extreme. Small patches of agricultural lands are found in the southern part, where small farms might be located, but usually the mountains descend precipitously to the sea with their flanks covered with dense and almost impenetrable forest.

The waters of the Alexander Archipelago form the highway for travel and transportation.

The climate in the southern portion of the district is mild, but intolerably rainy. The annual rain-fall at Sitka varies from 60 to 95 inches, and the annual number of more or less rainy days varies from 160 to 285. The mean temperature of the different seasons at Sitka, during the year 1868, was as follows: Spring, 42°; summer, 55°; autumn, 45°; and winter, 31°. Number of fair days during the same period, 105; cloudy, 260; rainy, 134; and snowy, 26. The weather in winter is warmer than Munich, Vienna, or Berlin, on the continent of Europe, and about the same as Washington, 1,095 miles further south, and warmer than New York, Philadelphia, or Baltimore.

At Sitka cereals fail on account of the moisture; turnips, beans, carrots, beets, lettuce, and radishes succeed well. Potatoes are small and watery from want of sun and excess of moisture.

The great staple of the southern Sitka district is timber. The most valuable forest tree on the Pacific coast, the yellow cedar, is found in this region. It combines a fine close texture with considerable hardness, extreme durability, and pleasant fragrance. For ship-building it is unsurpassed. This cedar, which is peculiar to Alaska, somewhat resembles boxwood in texture and color. It is familiar to many under the name of "camphor wood," imported from China in the shape of boxes, to which country it was exported from this Territory. Other trees are well known to the lumber trade of this coast, such as Sitka spruce or white pine, hemlock, and balsam of fir. The bark of the last two named are used in tanning.

Respecting the agricultural resources of the districts named in Alaska, we cannot look for a self-supporting population from farming pursuits alone in the Yukon district, or northern portion of the Territory; still it will not be necessary for the enterprising settler, emigrating there to develop the lumber, fish, or fur interests, to rely on the products of the

chase alone, for even there he may have fresh vegetables and milk upon his table if he but possess the knowledge to make the best of his opportunities.

In the Aleutian and in the northern part of the Sitkan district is situated the larger portion of tillable lands of the Territory, which may be roughly estimated at 25,000 square miles. The climatic conditions for agriculture have already been shown to be similar to those of Northwestern Scotland.

The fisheries of Alaska, although from a commercial point of view still in their infancy, are destined to become the most productive source of wealth and prosperity. Fish has always formed the principal food of the native population, being found in great abundance. The principal marine fish of the Alaskan waters are cod, halibut, herring, and mullet. The cod are the most abundant and valuable. They extend from the floating ice line in Behring Sea, near the mouth of the Kuskokwim, River to the Straits of Fuca. The known banks are of greater extent than Newfoundland. In 1867 there were 23 California vessels engaged in the cod-fishery in these waters. The product was 2,164 tons, or 947,264 fish, and the catch for 1869 is reported at 1,082,000 fish. This, at the low average of $3\frac{1}{2}$ pounds each, would be worth \$189,350 in gold. The fresh waters of Alaska abound in salmon, white fish, losh or burbot, pike, and suckers.

The salmon is of extraordinary size, and none of the more southern can compare with it in delicious flavor. The number consumed by the natives annually cannot be less than 1,200,000, at the lowest estimate. At the mouth of the Yukon 2,000,000 are dried every summer. The other fish mentioned are abundant in all the northern rivers. With the exception of oysters, shell-fish can be obtained almost everywhere north of Dixon's Entrance, and form a large part of the food of natives.

Among other sources of wealth is the pursuit of the whale, seal, and walrus. The products of the American whale fishery for the quarter ending June 30, 1868, were 1,483,083 gallons of oil, and 526,566 pounds of whalebone, the total value of which was \$1,661,922. The greater part of this came from the vicinity of Behring Strait. Not less than 70 American whalers visit Behring Strait annually. Whales, known as the bowhead, right whale, sulphur bottom, humpback, and California gray, are abundant all over Behring Sea, especially in the neighborhood of Bristol Bay.

The fur trade of Alaska, owing to the enormous profits attending its successful prosecution, is the only branch of industry which has been fully developed. In a pecuniary point of view, the catching of the fur seal is the most important business in the Territory, and was the principal object which led to the exploration of this region. There are two species which furnish the most valuable furs, viz., the sea otter and the fur seal. The former is called by the Russians the sea beaver, and the latter the sea cat. The fur of a sea otter is soft and black, while long hairs tipped with white add to its beauty. The length of a full-sized skin is about six feet, and breadth nearly four, valued at from \$80 to \$100. The sea otter is solitary and almost exclusively marine in its habits. It often sleeps on the surface of the water, floating on its back, and is said to clasp its young with one arm in an almost human way. The Aleuts are the otter hunters, and their manner of taking them is in this wise: A large number of the natives, with their kyaks, (canoes,) take provisions for a day or two, and put out in calm weather, often out of sight of the mainland. Upon arriving at

the banks most frequented by the animals, the natives form in a long line, and paddle softly on the water, to make no disturbance. When the Aleut sees the otter's nose, which is usually the only part above the surface, he throws his dart, at the same time elevating his paddle perpendicularly in the air, when the line encircles the animal in a cordon of kyaks, and every one is on the watch for the reappearance of the prize. The same process is repeated, until the otter is worn out with diving, and lies exhausted on the surface.

The fur seal are principally confined to the Pribyllopp group of islands, though formerly extending from the ice line of Behring Sea to the coast of Lower California. The fur seal fishery has of late years far exceeded that of the sea otter in value. The time for taking them at the islands is from the middle of June to the last of October, at which time they leave, it is supposed, to winter in the open sea south of the Aleutian Islands. They come up in droves of thousands on the hill-sides near the shore, and blacken the islands with their great numbers. They fight desperately, it is said, among themselves; each bull having five or six females, which he defends with great courage. They can ascend almost perpendicular rocks, which are polished and rounded in the vicinity of the fisheries, caused by their scrambling over them for ages. The seal are obtained by separating them in a body of four or five hundred, by the natives. They are then driven very slowly, like a drove of sheep, into the interior of an island, where they are killed by a blow on the back of the head, with a heavy, sharp-edged club. Care must be taken by the natives not to venture in the midst of a herd, or they would doubtless be torn in pieces, for their teeth, though very small, are exceedingly sharp. The skins are much smaller than the sea-otter, and after being dressed are of a black or rich brown color. They were worth in London, in 1868, about \$7 each, in the raw state. Of late years, not more than 50,000 were allowed to be killed by the Russians annually. The number of seal had greatly increased up to 1868, during which year there were taken on the Island of St. George 50,000, and 150,000 on the Island of St. Paul's. But at this rate they would soon be exterminated or driven away.

In order that this branch of industry may continue to be a profitable business for the settler in the new Territory, and a source of revenue to the Government, Congress has, by wise legislation, protected the fur-seal interests by restricting the annual taking of the seal.

Many fur-bearing animals which are not marine are found in large numbers throughout the Territory, among which are the fox, marten, mink, beaver, otter, lynx, and black bear, all of which add materially to the value and extent of the Alaska fur trade.

The most valuable minerals of the Territory are copper, coal, and sulphur, but our knowledge of the mineral resources of the country is meager in the extreme. Gold in small quantities is found in the sand of the Yukon, near Fort Yukon, and in the bay on which the Takee villages are situated and streams in the vicinity. Extensive beds of tertiary coal are found on Cook's Inlet, which is said to be excelled by none of the tertiary coal-bearing deposits on the continent.

Ice formed quite an important article of trade with the Russian American Company. It was formerly obtained from the latitude of Sitka, but it was found that it could not there be obtained of good quality and sufficient quantity. The establishments have been removed to Kodiak, further north, where they now remain. The value of ice exported from here to San Francisco alone in 1868 was \$28,000. A profitable business in this article will no doubt be eventually carried on with

ports in Mexico, Sandwich Islands, India, and China, and on the west coast of South America. The number of Americans at present in Alaska, excepting the troops, does not exceed 500; number of foreigners, about 600; and native population, 28,000.

The field now open for exploration and discovery in Alaska is grand. The interior everywhere needs exploration, particularly the great plateau north of the Yukon, the valley of the Kuskokuken and Copper River.

Time alone must prove the ultimate value of the new Territory, but enough is already known of its valuable and extensive resources to insure their speedy development by the irresistible energy of our citizens. The government will doubtless hasten settlement and development in this remote region by commencing the work of surveys in the Territory as early as practicable, and establishing a land office at some central point, thus enabling settlers to enter and acquire title to the public lands.

South of Alaska, and separated therefrom by British Columbia, is

WASHINGTON TERRITORY.

Its northern boundary is the forty-ninth parallel, which, prior to 1867, was the highest latitude of our domain. The Columbia River and Oregon are on the south, Idaho on the east, and the Pacific Ocean fronts it on the west. The resources of this Territory, embracing 44,796,160 acres, are vast and varied, although, like the greater portion of the Pacific slope, but comparatively little developed. It has the finest harbor in the world, immense tracts of valuable but uncultivated land, rich in minerals, with extensive fisheries and vast lumbering interests. The various and beneficent laws of Congress pertaining to the public land system extend over this region. The surveys completed during the past fiscal year amounted to 304,484 acres, to which add the surface previously surveyed, 5,063,775 acres, and we have a total amount of land in the Territory surveyed of 5,368,259 acres. Total amount surveyed and undisposed of 41,239,193.13 acres.

The principal natural features of Washington Territory are the Cascade Range of mountains, the great ramification of waters in the north-western portion which have received the cognomen of Puget Sound, the Columbia River, which river, first traversing its whole breadth, and setting off nearly a third of its surface, forms a southern boundary from near Fort Walla-Walla to the ocean.

The snow line is about 5,000 feet, and but few points in the Territory attain an elevation above that height, with the exception of the lofty peaks of the Cascade Mountains, Ranier, St. Helens, Baker, and Adams. The Cascade Range through this Territory bears slightly northwest and southeast. There are several rivers passing through this range, which afford practicable passes for the construction of rail or wagon roads; among these are the Skagit, Snoqualmie, Cedar, Nachess, and Cowlitz. A wagon road has been constructed from Wallula to Fort Steilacoom, via the Nachess Pass, over which quite an emigration has passed.

The Columbia River rises in the Rocky Mountains of British Columbia, in latitude 50° 20'. At the forty-ninth parallel the Pend d'Oreille, the great north fork pours its waters into it, then flowing south receives the waters of the Spokane, Yakima, and Snake Rivers. At the mouth of the Walla-Walla it takes a westward course to the Pacific Ocean, its volume still increasing from several small rivers from the north and south. This river and its tributaries drain about two-thirds

of the Territory, and with the exception of a few obstructions by rapids, around which portages have been constructed, is navigable from its mouth for 725 miles; sea steamers of large tonnage ascend to Vancouver, 115 miles, without interruption.

Puget Sound, the Mediterranean of the north, includes the Strait of Juan de Fuca, Admiralty Inlet, Hood's Canal, and numerous other bays, harbors, and inlets, each having a separate name. These waters are remarkably clear of shoals, and nothing can exceed their beauty and safety. They cover an area of 2,000 square miles, and have a total shore line of 1,600 miles. The shores are exceedingly bold and heavily timbered. The country surrounding these waters is remarkably salubrious and offers every advantage for the accommodation of shipping, with convenience for docks, and many excellent sites for towns and cities, and also admirable sites for water-power.

Olympia, the capital of the Territory, Port Discovery, Port Townsend, Port Ludlow, Port Blakely, Bellingham Bay, and many other towns situated on Puget Sound, have become the sites of flourishing and extensive commercial, milling, and mining operations.

This is the contemplated western terminus of the Northern Pacific Railroad, and when completed, this portion of our domain, in reference to the commercial world, will become of vast importance.

The region of country lying between the Coast and the Cascade Mountains, which are at a distance from the ocean of two degrees of longitude, is usually termed Western Washington, or Puget Sound country. It embraces about one-third of the Territory, or 23,000 square miles, including the waters of Puget Sound. It comprises the country drained by the Lower Columbia, the basin of Shoal Water Bay, the valley of the Chehalis, and the Puget Sound Basin. The public surveys have been extended over a large portion of this western section, and the lands are being rapidly taken up by enterprising and intelligent settlers.

The greater portion of this region is unsurpassed for fertility of soil and manufacturing resources. The crops of wheat, barley, and oats succeed admirably, as also do the orchard and garden products, except Indian corn, peaches, and grapes, which, owing to the coolness of the nights, sometimes fail to mature.

In the valley of the Chehalis River is found the richest and most extensive body of agricultural lands on the Pacific slope. Wheat is said to average 40 bushels to the acre, oats 70, and potatoes 700. This is deservedly termed the garden spot of Washington Territory.

The climate in Western Washington is fine, except that, like a large portion of the northwestern Pacific coast, there is too much rain in winter to be agreeable. The summers are very pleasant; the nights being cool and refreshing. Although in a high degree of latitude, there is but little cold weather in winter. Snow or ice is very rarely seen except on the summits of the highest mountains, where it has perpetual existence. The absence of severe cold is the result of the tropical currents, before alluded to in this report as prevailing on the shores of Alaska, which sweep the coast from Behring Sea to the Gulf of California. Grasses of the most nutritious qualities are found in all the valleys of this region sufficient to sustain immense numbers of sheep and cattle through the winter season. It is seldom necessary to protect stock by housing and feeding them. Superior building and ship timber, principally fir and cedar, is found in the Puget Sound Basin, which grows thickly on the foot-hills and sides of the mountains from 1 to 15 feet in diameter, and from 2 to 300 feet in height, remarkably straight and beautiful.

On the Yakima River and its tributaries, which water a large portion

of the central section of the Territory situated between the Cascade Mountains and the Columbia River, are large tracts of surveyed rolling prairie and table lands suitable for diversified agriculture, and where many extensive settlements now exist. There are still, however, in this locality many tracts of unoccupied land, unsurpassed for fertility, to which the Government invites settlers desiring to develop the resources of this new country, capable of furnishing thousands of families with the blessings of independent and happy homes.

Some of the valleys, among which are the Methow, O'Kinapum and Ne-hoi-at-pu-gun, are exceedingly beautiful, with their smooth, grassy surface surrounded by hills and watered by streams, fringed on either side by small trees, rendering them sufficiently charming. Forests containing large timber are scarce in this section, except near the northern part, where good building pine is abundant.

The valleys of the Walla-Walla and Colville, situated east of the Columbia River, or in what is termed Eastern Washington, comprise the most important agricultural portion of the Territory, the former vast in extent, resting on the navigable waters of the Columbia, giving it commercial advantages superior to other portions of the country, while its numerous rivers and creeks meandering over its fertile surface, its rolling prairies and extensive table lands, covered with a luxurious growth of grass, gradually stretching away in one grand scene of loveliness, till lost from view among the distant blue mountains, covered with forests of gigantic pines, give it inherent resources and natural advantages for those seeking a home on this slope not to be overlooked.

The valley already contains a population of several thousand prosperous inhabitants, who annually ship to the sea-coast and to the mining communities to the eastward valuable cargoes of grain and produce, the result of their labors.

This region, for fertility of soil, ease of access, facilities for transportation, grazing, stock-raising, and grain-growing, possesses combined advantages destined soon to make it one of the most thickly settled portions of the Territory, and a locality where capital may seek profitable investment.

The Colville Valley, in the northeastern portion of the Territory, is another important valley, and contains large tracts of surveyed land ready for occupancy, and which is for the most part well watered and well adapted for agriculture.

For health and salubrity there is no climate on the continent which surpasses that of Washington Territory in the two divisions east of the Cascades. The objection to the humid climate of the coast is here removed, the annual rain-fall being only about one-fourth as much as at Puget Sound. The winters are dry, short, and tolerably cold. The spring and fall are mild and beautiful, with frequent showers of rain. The bracing mountain air, tempering the rays of the sun in summer, gives a healthful luxury to the climate of this region.

The Territory has now about 30,000 white population, and 50,000 Indians. The tribes of Indians number ten or twelve, and are generally on peaceful terms with the white citizens. The principal articles of export are lumber, fish, and coal.

As before remarked, the geographical position of Washington Territory, with the admirable harbor of Puget Sound, is destined to have an important bearing in connection with the commercial world. When the spirit of enterprise of our citizens shall have completed the Northern Transcontinental Railroad, with the Pacific terminus here, direct lines of steamers to accommodate the increased travel of a continent must be

established between Puget Sound and ports in Japan and China, and fleets of clipper ships will be required to transport the cargoes of Europe and America to and from Puget Sound to Yokohama and Shanghai, a route which, taking advantage of the winds and currents, is many hundred miles shorter, and several days' sail nearer, than from San Francisco to those ports.

OREGON.

South and adjacent to Washington Territory lies Oregon, the State most northwesterly of the republic. It has a surface about one-half the extent of California and one-third greater than Washington Territory. The eastern boundary of this State is Idaho, and the southern, California and Nevada.

Oregon contains all the elements essential to constitute greatness, although yet but partially developed. With an area of 60,975,360 acres preëminently productive and susceptible of diversified agriculture, a genial and healthful climate, scenery of great variety and beauty, it possesses extraordinary inducements for the settler, and must attract a large emigration of those who seek comfortable homes.

That portion of the State lying west of the Cascade Mountains—which are situated about 110 miles from the coast and parallel therewith—is divided into three principal valleys, the Willamette, Umpqua, and Rogue River, drained by the rivers bearing their respective names. This country is quite different in climate and physical characteristics from that portion east of the Cascades, comprising about two-thirds of the surface.

The four principal navigable rivers are the Columbia, Willamette, Snake River, and Pend d'Oreilles or Clark's Fork. There are others navigable for short distances in a high stage of water by light-draught vessels, among which are the Cowlitz, emptying into the Columbia; Yamhill, Tualtien, and Santiam, emptying into Snake River. The Columbia River and its tributaries will be found described in this report in connection with the resources of Washington Territory. It has a shore-line in this State of 230 miles, and constitutes about two-thirds of the northern boundary, for which distance there is no interruption to navigation except at the Cascades, 160 miles from its mouth, where a portage by rail of 6 miles has been constructed, and at Dalles City, 50 miles further up, where a portage of 14 miles is necessary and is also accomplished by rail. Snake River empties into the Columbia near Fort Walla-Walla, and is navigable a distance of 160 miles. Pend d'Oreilles, or Clark's Fork of the Columbia, is navigable for 225 miles, and the Willamette to Eugene City, a distance of 200 miles. There are good harbors on the coast of Oregon, the most important of which is that at the mouth of the Columbia River. By the use of a steam-tug in crossing the bar, the entrance to this harbor is rendered as safe as that of the Golden Gate or Straits of Fuca. The others are Yaquina, Umpqua, Port Orford, Coquill, and Tillamook, all of which are safe at most seasons of the year. Upon the settlement and development of the country contiguous to these harbors, they are destined to become places of commercial importance to the State.

Of the total area of Oregon 9,515,743.55 acres have been disposed of, leaving 51,459,616.45 acres the title to which is still in the United States. The total cultivated area of the State is estimated at 550,000 acres.

The face of the country east of the Cascade Mountains is diversified, hilly, and, in some parts, mountainous; but, for the most part, consists of rolling prairie and level plains, stretching out from the foot of the

mountains nearly to the eastern boundary, covered with luxuriant bunch grass, affording an inexhaustible pasture for stock, for which this portion of Oregon is so justly celebrated. Its nutritive properties are unsurpassed. The soil is moderately rich, the chief component of which is silica, containing but a small amount of vegetable matter. Mountain streams intersect these table lands, flowing through fertile valleys of various dimensions, yielding large crops of cereals wherever they have been tested. Fabulous crops of nearly all varieties of vegetables are produced.

The principal valleys of this region are the Des Chutes, John Day, Powder, Grand Ronde, Burnt, Malheur, and Owyhee, watered by rivers bearing the same names. The Grand Ronde, in the northeastern portion of the State, is a beautiful, circular valley, some thirty miles in diameter, unsurpassed in fertility of soil, with scenery exceedingly picturesque. It is stated that from 40 to 60 bushels of wheat per acre, with an ordinary system of cultivation, may be produced in this valley. Indian corn, tobacco, onions, tomatoes, and peaches mature here in abundance in favorable localities. A large portion of this region is surveyed, and many thriving settlements exist. Powder River Valley is quite extensive, with a large surface well adapted to grazing and agriculture. The country is being fast settled up, but still has large tracts of government land unoccupied. Le Grand, situated in this valley, 85 miles from the Columbia River, is a flourishing town and the seat of one of the local land offices. It has considerable and growing trade with the mining districts of Eastern Oregon and Idaho. There are about 9,000 acres of land under improvement in these valleys. The country of the Burnt, Malheur, and Owyhee Rivers offers excellent inducements to the emigrant wishing to settle and develop a new country. The soil is good and the face of the country is covered with nutritious grass, and is heavily timbered. From the summit of the spur of the Blue Mountains, which divide the Malheur and Owyhee Valleys, the scenery for grandeur can scarcely be surpassed. Here may be seen a valley stretching away in an unbroken line of verdant beauty, its smooth surface presenting a strong contrast with the undulating upland, alternating between grass-crowned hills and forests of gigantic pine. Such scenery can scarcely fail to awaken the wish for the landless poor of the older countries to apply the hand of civilization to these rich gifts of nature, and convert these extensive wilds into prosperous and happy homes. These valleys are well adapted to diversified agriculture; grain of all kinds matures well, and fruits, vegetables, butter, cheese, and every species of farm productions are raised here, and command a high price at the various mining camps in the vicinity. Indian corn thrives, and this is thought to be as good a fruit country as that west of the Cascades, so justly denominated "the fruit garden of America." Of the 4,600,000 acres in these valleys there are only about 5,000 under cultivation. In the central portion of the State, between the Cascades and Blue Mountains, along the Des Chutes and John Day Rivers and their tributaries, is situated a tract of country 200 miles in length and 150 miles in breadth, equal in extent to the States of Vermont, New Hampshire, and Massachusetts. The settlements in this section are confined almost exclusively to the northern part, along the Columbia and the intermediate branches. A few new settlements have been commenced in the southern part, in the vicinity of Klamath and Goose Lakes. These valleys are for the most part fertile, excellent locations for stock-raising and general farming, and offer inducements for settlement far superior to those held out to the early settlers of the Atlantic slope. By far the larger portion

of this country may be set down as an almost unbroken wilderness of mountains and valleys, hills and plains, with here and there a lake and the tributary of a small river, and an occasional settlement.

The climate of Eastern Oregon has some resemblance to that of the older Northwestern States of the Mississippi Valley. The winters are of short duration, cold and dry, but not subject to the extremes known to the same latitude east of the Rocky Mountains. The summers may be considered hot, but not sultry and oppressive. The summer days are rendered delightful by a salubrious mountain air, and the nights are cool and refreshing. The mean temperature of the different seasons, at Dalles City, in Eastern Oregon, is spring 53°, summer 70°, autumn 52°, and winter 35°.

The Willamette River, in Western Oregon, or in that division between the Cascade Mountains and the ocean, drains the extensive and beautiful valley of that name. This valley is 200 miles long, and from 50 to 60 miles wide, sustaining a population of 60,000, with ample resources and room for a million. The general geological features of this region give indications of a sedimentary formation, with but little of a mineral character, except near the Cascade Range of mountains. The soil along the banks of the Willamette and its tributaries is composed of sand, vegetable matter, and various decomposed earths, and may be considered strictly alluvial. The soil is of superior capacity for producing corn, tobacco, and various kinds of roots and vegetables of the most astonishing growth. The prairie lands, which compose a large portion of this valley, are a dark, rich loam and vegetable mold of exceeding fine quality, especially adapted to the production of all kinds of cereals, although vegetables, fruit, and the various tame grasses flourish correspondingly well with grain. The soil is remarkably tractable and but little affected by drought.

The hill lands are of a reddish clay loam of good quality, more suitable to grazing and stock raising than other farming purposes.

The adaptation of this valley for diversified agriculture may be shown in the productions of Linn County for 1868, situated in this section and comprising but a small portion of its surface, containing less than 2,000,000 acres, of which 100,000 only are under cultivation. The result was 400,000 bushels of wheat, 600,000 of oats, 18,000 of corn, 11,000 of barley, 19,000 pounds of tobacco, 264,000 pounds of wool, 600,000 bushels of potatoes, 107,000 bushels of apples, 523,000 pounds of butter, and 9,000 pounds of cheese. The county also contains about 20,000 head of cattle, 8,000 horses, 25,000 hogs, and 50,000 sheep.

Willamette Valley is a most desirable location for the settler, possessing a mild and healthful climate, pure water, the advantages of a navigable river through its entire length, and a soil that, for fertility and productiveness, is not rivaled by the Connecticut, Hudson, Genesee, or Mississippi Valleys. There are more surveyed lands in this valley than in all the other portions of the State combined, and many valuable and extensive tracts are still unoccupied. Of the entire area of the valley, 8,000,000 acres, there are not more than 400,000 under cultivation. The falls of the Willamette, situated at Oregon City, 24 miles from its mouth, have a water-power equal to one million horse-power, far exceeding that of all New England. Other localities in this valley, as well as in other portions of the State, have abundance of water-power adapted to milling and mechanical purposes.

In the northwestern portion of the State, on the Columbia River, are extensive salmon fisheries, employing a capital of \$200,000 or \$300,000 and rapidly increasing in importance. This branch of industry, when

fully developed, is destined to be a source of great wealth to the State. Astoria, situated in this vicinity, twelve miles from the ocean, has a fine harbor, capable of accommodating ocean steamers of the largest size, and affording a safe harbor for sailing vessels of the largest tonnage.

Umpqua Valley, separated from the great Willamette by the Calapooya Mountains, contains over 1,000,000 acres of arable land, with 30,000 under cultivation. The face of the country in this valley bears a strong resemblance to that of New England, being uneven, undulating, and in some portions hilly.

In the southwestern portion of the State, near the California boundary, is situated Rogue River Valley. There are about 25,000 acres of land under improvement in this valley. It is celebrated for its minerals as well as its agricultural productions. Immense quantities of gold have been taken from the placers during the past ten years, and numerous quartz lodes of inexhaustible wealth exist, rendering it a section of great importance to Oregon. New discoveries of gold are being annually made, with the knowledge that iron, coal, silver, lead, and copper abound in this locality, the development of which is but in its infancy. Jacksonville, in this valley, is a flourishing mining and agricultural town, containing a number of public and private schools, churches, well-built brick stores, and neat private residences, giving it the appearance of one of the older settled towns of the East.

The climate of Western Oregon is greatly affected by its proximity to the ocean; although in a high latitude, it is mild, neither very hot in summer nor extremely cold in winter. It has a humid atmosphere, somewhat disagreeable in winter, but delightful through summer and autumn. Snow and frost are not frequent during any part of the year.

The mean temperature of the different seasons at Corvallis, on the Willamette River, which corresponds with the greater portion of this division, is, spring, 52°, summer, 67°, autumn, 53°, and winter, 39°.

Oregon, with immense tracts of grazing and pasture lands for the production of wool, inexhaustible beds of iron and coal, with timber in great abundance, together with an ample and effective water-power, possesses extraordinary natural manufacturing facilities, which the energy and capital of her citizens will speedily develop.

The commerce of the State, although in a great degree confined to a home trade with San Francisco, New York, and other domestic ports, exports a considerable portion of her products to China, Japan, and the Sandwich Islands.

The salmon fisheries of Oregon and the lumber interests constitute an element of wealth only exceeded by that of agriculture. The salmon taken in the Columbia are of a superior quality, and the gross receipts for the catch during the last year was \$276,000.

Vast forests of excellent pine and spruce timber, valuable for ship timber and building purposes, extend along the coast from Port Orford to the Columbia River, much of which is easy of access from tide-water, and requires only capital to render Oregon equal, if not superior, to the other States so celebrated for their lumbering wealth.

Portland, situated on the west bank of the Willamette River, twelve miles above its confluence with the Columbia, in a business point of view, is second only to San Francisco on the Pacific slope. The trade of Portland with the interior and different points on the Columbia and Willamette requires the constant employment of twenty river steamers, and has an extensive commercial intercourse by sailing vessels and steamers with San Francisco, New York, the Sandwich Islands, and other foreign ports.

With the completion of the Oregon Central Railroad, now under construction, connecting with the Central Pacific in California, the contemplated Columbia River Valley Road, connecting Portland with the Union Pacific, by the way of Salt Lake, and with a branch of the Northern Pacific to connect this point with Puget Sound, Portland will attain a proud commercial position. The present population of the city is about 10,000.

The other towns of importance on the Willamette are Salem, the capital, 80 miles south of Portland, with a population of 4,000, Oregon City, Oswego, Albany, Corvallis, and Eugene City, with a population of from 1,500 to 2,000 each. The principal towns on the Columbia are Astoria, Ranier, St. Helen's, Vancouver, Dalles City, Umatilla, and Hollula. All of these towns, from their favorable location, are destined to become places of considerable commercial importance. The local land offices of this State are at Roseburg, Eugene City, and Le Grand.

The next political division of the republic, south of and adjoining Oregon, fronting the Pacific Ocean, is

CALIFORNIA.

This State having been introduced to the world through the discovery of its precious metals in 1848, it is only recently that the value and importance of her vast and varied agricultural and other industrial resources, aside from minerals, have been properly understood and appreciated. The geographical position of California, with reference to commerce, is unrivaled, the State possessing a genial climate of unparalleled salubrity, with a soil of unexampled fertility, diversified with beautiful plains, enchanting valleys, undulating hills, and rugged mountains, is only rivaled in extent of territory by Texas.

California is a long parallelogram, extending from latitude $32^{\circ} 45'$ to 42° , is 700 miles in length, with an average breadth of 200 miles, and contains 188,981 square miles or 120,947,840 acres, of which 32,338,378 acres have been surveyed.

Excluding the area granted by the General Government for different purposes, also the surface covered by Spanish and Mexican titles, and the quantity embraced in sales and locations, there yet remain 100,070,177.16 acres of public land within the limits of the State liable to disposal. Of the total surface of California it is estimated 90,000,000 acres are susceptible of diversified agriculture, or of otherwise being made productive.

The Coast Range of mountains, though not so high or so wide as the Sierra Nevada, may properly be considered the principal natural feature of California. They extend the whole length of the State, nearly parallel with the ocean, at an average distance therefrom of about 50 miles. The height varies from 2,000 to 6,000 feet, with a width of from 20 to 40 miles. The State may be geographically divided into the coast and interior districts, separated from each other by the Coast Mountains. The former comprises the coast valleys, separated from each other by spurs of the mountains, generally running at right angles therewith. The latter embraces the Sacramento basin, the plateau of the Sierra Nevada, the Klamath basin, the Great Basin of Utah, and the Colorado Desert.

The rivers of the Coast Mountains south of San Francisco are generally small streams, and, with the exception of the Salinas, are usually swallowed up in the sands before reaching the ocean. There are none navigable except the Salinas, and that only for a short distance from its mouth by light-draught vessels. North of San Francisco the main streams

rising in the Coast Mountains are the Russian, Elk, and Smith Rivers, but none of these are navigable.

The only lake of importance in this section is Clear Lake, 20 miles long and 10 wide, surrounded by a charming little valley of fertile land. The valley is bounded on all sides by high mountains, with scenery very attractive.

California has four land-locked harbors, viz., San Diego, San Francisco, Tomales, and Humboldt. Their general course is nearly parallel with the coast, and separated from the ocean by narrow peninsulas.

San Diego, near the southern boundary of the State, is 12 miles long and from 1 to 2 wide. It has a channel 30 feet deep and half a mile in width. It forms a secure harbor at all seasons of the year, and is next to that of San Francisco in importance.

San Francisco Harbor, one of the most magnificent in the world for commercial purposes, is about 8 miles wide and 50 long. Its entrance at the Golden Gate, or Chrysopolis, is a mile in width. The water on the bar at low tide is 30 feet, and inside much deeper, with excellent anchorages and room for all the shipping of the world.

Tomales and Humboldt, north from San Francisco, are each fine and safe ports for vessels at most seasons of the year. Their harbors are each about 12 miles long and from 2 to 5 in width.

There are other harbors on the coast, not land-locked, which are safe at certain seasons of the year, and might be made perfectly secure by artificial means; among these are San Pedro, San Luis Obispo, Monterey, and Santa Cruz, all south of San Francisco, and Drakes, Bodega, Trinidad, and Crescent City, north of the Golden Gate.

The Sacramento River flows into Suisun Bay, which is connected with the bay of San Pablo and San Francisco by the Carquinez Straits. It is navigable for steamers drawing three feet of water to Sacramento City, 135 miles from San Francisco, at all seasons, and to Red Bluffs for boats drawing fifteen inches. The Feather River is navigable for steamers drawing fifteen inches of water to Marysville, 75 miles from Sacramento, and boats have ascended in a high stage of water to Oroville, 25 miles further north.

The San Joaquin can be regularly navigated by steamers drawing five feet of water to Stockton, a distance of 130 miles from San Francisco, and in times of high water light-draught vessels can ascend to Fresno City, 150 miles further.

The Sierra Nevada Range of mountains, near the eastern boundary of the State, is 450 miles in length in California, and 70 wide, with a height varying from 5,000 to 8,000 feet above the level of the sea; the greater portion of the range is heavily timbered. The oak, manzanita, and nut pine cover the sides to the height of 2,500 feet, and then the coniferous trees appear, and are found in dense forests to a height of 6,000 feet. Nearly the whole width of the Sierras is occupied with its western slope, which descends to a level of 300 feet above the ocean, whereas the slope on the eastern side is but 5 or 6 miles wide, and terminates abruptly in the Great Utah Basin, which is from 4,000 to 5,000 feet above the sea. The picturesque scenery throughout all this Sierra Range is on a scale grand beyond description, hundreds of lofty peaks, varying in height from 1,000 to 14,000 feet above the level of the sea, piled one above the other like stepping-stones to other regions, are truly sublime and majestic, far surpassing that of Switzerland, which for ages has been famed for possessing the largest body of elevated land and the greatest number of mountain peaks. While Switzerland has only four peaks above 13,000 feet, and but 150 square miles above 8,000 feet, the

Sierra Nevada has 100 peaks above 10,000 feet, and 300 square miles above 8,000 feet.

The loftiest peak of the Sierras is Mount Shasta, which rises in the northern portion of the State to a height of 14,390 feet in the region of perpetual snow. It forms the most prominent landmark in California, and may be distinctly seen in all directions at a distance of 100 miles. This mountain, towering in solitary grandeur, with its snow-capped summit glistening in the rays of the sun, appears like a silvery cloud when viewed from Marysville, a distance of 125 miles. It is of volcanic origin, and still emits sulphurous vapors from its summit. Among other prominent peaks are Lassens Buttes, Castle Peak, Downieville Buttes, and Pilot Peak.

The rivers of this range run westward at right angles to the course of the chain, and cut it into steep and deep ravines, cañons, and chasms. The valleys are usually small, and it is rare to see 100 acres compact sufficiently level for tillage.

In the southern portion of the State, in the vicinity of Mount St. Bernardino, are the Mojave and Owen Rivers, the former about 100 miles in length, and the latter, after running 75 miles along the foot of the Sierra Nevada, terminates in Owen Lake, which is 15 miles long by 9 wide. North of Owen Lake 100 miles is situated Mono Lake, 8 miles long and 6 miles in width, sometimes called the "Dead Sea of California." No fish can live in the water, which contains such large quantities of saline substances that the human body floats with ease on its surface. This section of country is generally sterile, and for the most part unproductive.

In the basin of the Colorado River, in the southeastern portion of the State, usually termed the "Colorado Desert," the soil in some sections is composed of sand packed together firmly, with a smooth surface, which reflects light like a mirror. The Colorado River is navigable to Fort Yuma, 75 miles from its mouth.

The natural scenery of California is extensive and grand beyond description. The high snow peaks of the Sierras, before alluded to, the rivers meandering through large and fertile valleys, wide bays, forests of the largest and most graceful evergreens, parks of majestic oaks, natural meadows covered with rich grasses and flowers, combined with a remarkably pure and clear atmosphere, are all attractive in the extreme. In the Yosemite Valley may be found more scenes of grandeur and beauty than in any equal space on the globe. The valley is a chasm in the Sierra Nevada, 4,000 feet above the sea, 10 miles in length, with an average of 3 in width, shut in by walls of rocks almost perpendicular, from 2,000 to 4,500 feet high, and has, within a radius of 5 miles, 5 cascades, ranging from 400 to 2,000 feet. These falls, sometimes called by the Indian name Chalock, are, so far as height is concerned, the greatest cataracts in the world. They are situated about 120 miles due east from San Francisco. This valley has, by congressional enactment, been granted to the State as a place of public resort.

Another point of great natural interest is the Mammoth Tree Grove, situated in Mariposa County, 20 miles distant from the Yosemite. The grove contains 427 trees, ranging from 20 to 34 feet in diameter, and from 275 to 325 feet in height. The mammoth tree is a cone-bearing evergreen, belonging to the botanical genus *Sequoia gigantea*. It grows in a deep fertile soil, always surrounded by a dense growth of smaller evergreens, such as the pine, fir, spruce, and California cedar. The wood is soft, elastic, and straight-grained, light, when dry, and of red color, very durable, and bears a close resemblance to red cedar.

Another group of these trees is found in Calaveras County, in San Joaquin Valley; they are about 90 in number and in size from 15 to 33 feet in diameter, proportionately tall. One of these trees, which has fallen, is hollow from the base for a distance of 75 feet, through which a horseman can conveniently ride.

In the valley of the Russian River are situated the Geysers, another of the many wonders of California. They are found in a deep ravine, in a district filled with the marks of violent volcanic action. They consist of a multitude of boiling springs, emitting large quantities of steam, with a hissing, roaring noise. The chief feature of the Geysers is termed the "Steam-pipe," an orifice, of about 8 inches in diameter, in the hillside, from which rises a large volume of steam to a height varying from 50 to 200 feet. The steam roars constantly, sometimes bursting out in puffs louder than an escape-pipe of a steam-engine.

Another remarkable feature of the Geysers is the "Devil's Punch-bowl," or "Witches' Cauldron," as it is termed. This is a large hole, six feet in diameter, in the hillside, the liquid in which is black and thick, and always in commotion with the heat. These springs are 1,700 feet above the sea-level.

Agriculture in California constitutes one of the chief elements of wealth and prosperity, and when her unoccupied millions of acres shall be reduced to cultivation, and improved methods of culture shall be introduced, this State must become one of the richest agricultural districts on the globe.

It is estimated that the coast district contains 30,000 square miles of mountains and 20,000 of valleys, and the interior district 80,000 square miles of valleys and plains, and 50,000 of mountains. Of the total area of the State about 2,300,000 acres are under cultivation.

The largest grain-producing valleys are situated in the interior district, or in that portion of the State lying between the Sierra Nevada and Coast Mountains. Those are the San Joaquin, Tulare, Sacramento, Scott, and Shasta Valleys. The first two extend from Stockton to Tejon Pass, 300 miles, and have an average width of 50 miles, embracing an area of 9,600,000 acres, a larger surface than the States of New Jersey, Connecticut, Delaware, and Rhode Island combined. It is estimated that these valleys contain 6,000,000 acres of tillable lands, which estimate does not include land in the hundreds of little valleys in the mountains and foot-hills, well adapted to fruit culture, particularly the grape in most of its varieties. The lines of the public surveys have been extended over a large portion of this region during the past year.

It is only since a recent period that these lands have been much sought after by settlers; during the last two years more have been taken up for settlement and cultivation than all the preceding years. The lands bordering on the Stanislaus, Tuolumne, Merced, Fresno, and Chinchilla Rivers are exceedingly fertile, the soil being an alluvial sandy loam enriched for ages by the accumulation of decomposed vegetable matter and mineral washings from the mountains and foot-hills, is well adapted to the production of the cereals in their greatest perfection. The same is true of the section bordering on King's River and Tulare Lake. Hundreds of thousands of acres, suitable for grazing and stock-raising, are found on the mountains and hillsides. This portion of the State has been a favorite locality for the Spanish and American stock-raisers, the climate being more genial for raising immense herds of stock than in the northern portion. The old Spanish breeds of cattle and horses which roamed in these valleys have been replaced by the introduction of superior American breeds—by pure-

blooded horses, Devon and Durham cattle, Spanish and French merino sheep, Berkshire, Suffolk, and Essex hogs.

As an instance of the rapid development of the resources of these valleys and their capacity for producing grain, it may be stated that, in a section of country lying between the Stanislaus and Tuolumne Rivers, containing an area of 230,000 acres, all in one wheat-field, produced during the last year 3,456,000 bushels. Many other localities in this section are shown to be equally productive.

In the Sierra Nevada Mountain regions flanking these valleys dense forests of pine for lumber and valuable woods for mechanical purposes cover thousands of acres; where are also found inexhaustible quarries of marble, quartz, lime, slate, and freestone. This chain of mountains, wearing a somber blue, overlooking these splendid valleys, is one of the most romantic features of the State.

The Sacramento Valley, lying in a northerly direction from Sacramento, is another of the great valleys of the Golden State. It is 300 miles in length with an average of 40 miles in width, and abundantly capable of sustaining a population of one million, being greater in extent than many of the principalities of Germany.

In the southern part of this section the land is mostly occupied and under a high state of cultivation. In the northern part immense tracts, suitable to diversified agriculture, still remain open to settlement. About 1,000,000 acres along the bank of the Sacramento River and its tributaries are tule or swamp lands, and might be made highly productive by the construction of levees and canals to keep the river within its banks, or to relieve it of surplus water when necessary. Large tracts in the foot-hills of the Coast and Sierras have recently been surveyed.

The Scott and Shasta Valleys, in the northern portion of the State, are each about 30 miles long and 4 wide; they have an elevation of from 3,000 to 4,000 feet above the sea. Wheat, oats, apples, and potatoes do well in this section, but maize and melons require a warmer climate.

The largest tract of level land in the plateau of the Sierra Nevada is the valley of the Suisun River and Honey Lake; these valleys are at a high elevation, and contain numerous tracts of tillable soil. All along the northwestern slope of the Sierra Nevada there are many tracts of good land heavily timbered and sufficiently level for cultivation. Sierra Valley in this section is 45 miles long by 6 wide, and is drained by a tributary of the Feather River. The soil is usually of red clay or black loam.

The principal valleys in the coast district are the Russian River, Petaluma, Sonoma, Napa, Suisun, Vaca, Diablo, Amador, Santa Clara, Pajaro, and Santa Inez; Russian River Valley produces more maize than all the rest of the State; grapes succeed well. Petaluma Valley is the chief dairy district of California. Sonoma Valley has a soil of red, gravelly clay near the mountains, and a warm sandy loam near the streams. This is the chief grape district in the northern half of the State. Napa Valley, in proportion to its size, has a larger surface under cultivation than any other portion of California. It is a delightful valley, and has many attractive landscapes. Suisun and Vaca Valleys are both under a high state of cultivation. The soil is well adapted to the culture of the cereals, as well as garden and orchard productions.

The soil along the eastern side of the Bay of San Francisco, and in Santa Clara Valley, is the richest in the State, and is termed the garden spot of California. Fruits and vegetables attain an enormous size, and

are very abundant. Pajaro Valley is unsurpassed in the production of wheat and potatoes.

A considerable portion of the level lands in Los Angeles, San Bernardino, and San Diego Counties in Southern California is sandy, but by no means dry. If properly irrigated, they could be made to produce bounteous crops of small grains. Several townships have been surveyed in this locality during the past year. The most extensive vineyards in the State are planted in the bottom lands of the Los Angeles, San Gabriel, and Santa Anna rivers, where the soil is almost pure sand, and yet vineyards, which have been in bearing for more than twenty years, and have never been fertilized, are now as productive as ever.

The soil in some of the valleys in the lower counties between the Coast Range and the ocean is of almost inexhaustible fertility; it will produce year after year without any fertilizing, when properly cultivated. Figs grow abundantly, and as good as the best from the Mediterranean. Oranges, pomegranates, dates, limes, castor beans, English walnuts, bananas, sweet potatoes, and lemons, all flourish, and are produced in great abundance in this latitude. The heliotrope century-plant, oleander, and roses of numerous varieties, are in bloom during the winter months in the open air. Sweet potatoes weighing 17 pounds, and beets weighing 90 pounds are not uncommon.

The climate is such that crops grow the year round. Day after day the sun shines in a cloudless sky for 200 days in the year. The nights are always cool, tempered by the ocean breeze.

Barns are not used by the California farmers for storing crops. The grain, after cutting and thrashing, is left lying in sacks upon the field until it is sold, often a period of months. In August and September the square piles of white sacks of grain in the stubble fields are a common and prominent feature of the California landscape in the agricultural districts.

The aggregate amount of grain produced in California for the year 1869 was, wheat, 20,000,000 bushels; barley, 8,000,000; oats, 1,200,000; and maize, 1,000,000. Of this aggregate it is estimated that 4,000,000 of centals of wheat will be in market for export, or from 200,000 to 250,000 tons.

Of the amount exported the greater portion goes to England. At Vallejo an elevator for storing and shipping grain has been erected. The shipment of grain in bulk, however, to Europe has not become popular.

The climate and soil of California are admirably adapted to the culture of the mulberry tree and the rearing of silk-worms; all varieties flourish luxuriantly without the means of artificial heat. It is believed this State will surpass all European countries in the production of cocoons, both in quantity and quality. The product for this year is estimated at 25,000,000. That superior silk fabrics can be manufactured from the native cocoon has been fully proved by the production of a beautiful silk flag of immense size presented to Congress by one of the most prominent silk culturists of the State, now on exhibition at the Capitol. The silk-worm is very delicate, and it is subject, in Europe, to many diseases, most of them traceable to climatic influence, from which this State is exempt. Climate is a matter of vast importance to the breeder of the silk-worm, and nowhere is it more favorable than in California. The worms are remarkably healthy and prolific, the cocoons large, the fiber strong and fine, the mulberry luxuriant in growth, and hardy. The California Silk Manufacturing Company, with a capital of \$50,000,

is now erecting a factory at San Francisco for the purpose of developing this new branch of industry.

During the last ten years the area of land in the State devoted to viniculture has been rapidly augmented, and the manufacture of wine already forms one of the most important branches of industry. In Sonoma Valley the number of vines is estimated at 500,000, and in Los Angeles County, 3,250,000. In Anaheim Valley, in the lower country, a large breadth of young vineyards has been planted by a German colony. There are also extensive and flourishing vineyards in Napa Valley and San José, and it is believed that the aggregate of vineyards among the isolated hill-slopes of the mining counties is nearly equal to that of the large vineyard districts. The greatest success has been attained in the production of port, white wines, and the sparkling wines of the champagne class. The superiority of the climate in the mining foot-hills for the development of the saccharine element of the grapes, the volcanic soil, and the opportunity afforded for thorough drainage, and the facilities for irrigation, will eventually make viniculture in the mining counties one of the leading industries. Their climate is especially adapted to the production of the sherry and Madeira class of wines. The distillation of brandy is carried on quite extensively. The production of all varieties of wines for 1868 aggregated 2,587,764 gallons, and that of brandy, 257,333 gallons. The crop of grapes being abundant the result for the last year will show a large increase over these figures.

It is believed by persons competent to determine that the western slope of the Sierras, in this State, is as well adapted to the successful culture of the tea plant as the tea-producing districts of China, a subject elsewhere specially considered in this report. In El Dorado County a company of Japanese tea culturists has recently located for the purpose of engaging in this important branch of industry. Their experiment gives them great encouragement and promises abundant success.

The hop crop is larger and more regular in California than in any other country. The summer rains, which wash the lupuline or bitter dust from the blossoms in Europe, are unknown in this State, as are also the mildew and hop insect, which are destructive only in moist climates. The average yield is three quarters of a ton per acre, from vines in full bearing, and in England and New York about half as much. Not only is the yield in this State larger, but the quality is better, for as there are no showers during summer there is nothing to carry away any of the strength. Several lots of California hops have recently been sent to Europe, as it is stated they possess desirable qualities lacking in those of European growth.

There are essentially two climates in California, the interior climate and the coast climate. The latter derives its low temperature in summer, and evenness of temperature throughout the year, from the ocean, the water of which, along the coast, stands at from 52° to 45° all the year round. The mean temperature of summer in San Francisco differs but little from that of winter. From May until November the sky is cloudless, the sun comfortably warm, and the breezes gentle. Fogs are frequent along the coast during a few hours of the day in summer, rendering the atmosphere somewhat humid. The winters correspond with the month of May in Washington. The climate of the interior differs from that of the coast in having no fogs, the winter 4° colder, and the summer from 16° to 20° warmer. The climate of Sacramento corresponds with that of Naples throughout the year.

The mean temperature of the different seasons in the following localities is thus shown:

	Spring.	Summer.	Autumn.	Winter.
San Francisco.....	56° 5'	60°	59°	51°
Sacramento	56	65	61	46 5'
San Diego.....	60	71	64 5'	52 5
Humboldt Bay	52	57	53	53 43

The annual amount of rain-fall in San Francisco is about one-half that of the States east of the Mississippi, being 21.41 inches. San Diego has only one-half, and Fort Yuma one-seventh that of San Francisco.

Thunder-storms are very rare in California. Lightning is not seen more than three or four times a year at San Francisco, and then it is far off, playing about the peak of Mont Diablo, 30 miles distant. Thunder-storms are sometimes witnessed high up in the Sierra Nevada, but very rarely in any of the valleys of the State.

Earthquakes occur in some parts of the State, especially at San Francisco, Los Angeles, and near the Tejon Pass, at the southern junction of the Sierra Nevada and Coast Mountains. They are usually less frequent and less severe in the northern than in the southern portion of the State. However, no person has been injured, nor has any well-constructed building been damaged by earthquakes in California since the American conquest. Several brick walls in some of the towns have been injured, but they were lightly constructed and with weak foundations.

Although the annual production of gold mining in the State, is not now as great as in former years, the decrease is confined chiefly to the placer yields. In quartz mining more work is being done and in a more skillful manner, and there are more mines in successful operation. The business is flourishing and improving, with a good prospect of continuous increase. Many of the old mining enterprises have failed, owing to want of experience and skill, but of the enterprises entered into during the past five years in quartz mining the successful proportion is much larger than ever before.

The mining industry of the State having ceased to be a matter of general excitement, as in former years, has settled into a regular occupation, like that of agriculture, lumbering, and manufactures.

New discoveries have been made in various localities, but only one during the past year that has attracted general attention, which is the discovery of quartz gold mines in San Diego County, about 42 miles northeast from the city of San Diego, where quite a town has sprung up. The quartz veins, varying from six inches to two feet, encased in a wall of talcose slate, are found amid a series of high rolling hills. Some of the samples are reported to have yielded \$100 per ton. The aggregate product of gold in the State during the year 1869 is approximately estimated at \$31,000,000. The coinage of bullion for the same year at the San Francisco mint amounted to \$14,363,550.

Discoveries of tin, silver, gold, and cinnabar are reported in San Bernardino and Los Angeles Counties, and some important discoveries of ancient silver mines are stated to have been made among the low rock ranges in the Mojave Desert in the southeastern portion of the State.

The quicksilver interest is not now so prominent as in years past and the production not nearly so great, yet still some of the older mines obtain a fair yield.

There is a splendid field for great development of manufactures in the State, and the building up of extensive mechanical industry is inevitable.

The manufactures are, at present, principally confined to San Francisco, and operated by steam; but there is an abundance of water-power along the base of the Sierra Nevada, and many unoccupied sites for steam factories in the interior, equal to any in the commercial metropolis. Among the new branches of manufacture, introduced during a recent period in San Francisco, are the Pacific Rolling Mills, erected at a cost of \$1,000,000, having a capacity for manufacturing iron bars and rods of any shape from $\frac{1}{4}$ -inch to 36 inches in diameter.

This establishment was much needed on the Pacific slope, and will do away with the importation of a vast amount of manufactured metals, and have a tendency to stimulate new branches of labor by furnishing supplies of home materials. The large capital of these mills and their contemplated scope of manufacture in copper as well as in iron promise to do more to develop the resources of the State in these metals than all similar enterprises now in operation combined.

The Mission Woolen Mills and the works near Point San José have consolidated, intending to double the machinery and employ 1,200 operatives. The blankets made in these factories are equal, if not superior, to any made in the world. The fabrics produced consist of tweeds, beavers, cassimeres, shawls, blankets, flannels, and ladies' cloakings. It is estimated that this State and Oregon will produce the present year 19,000,000 pounds of wool, of which 14,000,000 pounds will be exported, leaving 5,000,000 to be manufactured here. Large woolen manufactures are also in operation at Sacramento, Oakland, and San José.

The Golden City Chemical Works has a capital of \$2,000,000. At the Pacific Glass Factory is made the coarser quality of glass vessels. There are three manufactories of acids and other chemicals, which supply the assay offices and mint.

There are eleven extensive flour mills, capable of manufacturing 500,000 barrels of flour annually. Eight saw mills turned out 8,950,000 feet of lumber in 1868. Three sugar refineries, have a capacity nearly double the local consumption. One establishment alone is capable of refining 120,000 pounds daily.

An immense tower in San Francisco is devoted to the manufacture of shot, and its owner has also a large establishment for the manufacture of lead pipes. There are in successful operation in and near the city extensive rope and cordage manufactories, powder works, Pacific Oil Works, Lead Works, and manufactories of various agricultural and mining implements and machinery.

The railroad enterprise, characteristic of American citizens, has been actively extended to the shores of the Pacific. Already the prosecution of this enterprise is attested by railroads traversing the State in many directions, while others are being rapidly constructed. The Central Pacific—a portion of the great transcontinental road—extending across the breadth of the State, has recently enlarged its side-tracks, and buildings for repair shops and manufacturing have been erected at Sacramento on an extensive scale. The Western Pacific connects Sacramento with San José, and has a branch at Oakland and Alameda, opposite San Francisco. The company has extended the long wharf at Oakland, during the year, 2,400 feet, making a total length of wharf of $2\frac{1}{2}$ miles in the direction of Yerba Buena Island, where ships drawing 24 feet of water can take in and discharge cargo.

The Western Pacific has also extended a branch for some distance up the San Joaquin Valley. A railroad is contemplated to connect Stockton with Visalia, with a view of forming connection with the Southern Pacific Road. The California and Oregon Road, under the control of the

Central Pacific, has been completed from Sacramento northward as far as Chico, and it is expected will be in operation to Red Bluff, at the head of navigation on the Sacramento River during the present season. The Southern Pacific road has been completed from San Francisco to Gilroy, in the direction of San Diego. A railroad is projected from a point on San Pablo Bay, through Petaluma, and thence up the Russian River Valley to the northern coast lumber regions. The Sacramento Valley road, in process of construction, will connect Placerville with Sacramento. Other minor roads in different sections of the State, undergoing construction or already in operation, might be mentioned.

The decennial census of 1870, it is believed, will exhibit a population in California of 600,000. There are about 60,000 Chinese in the State, 30,000 of whom are engaged in mining, or as operatives in factories and manufactures. The remainder are scattered over the State, engaged in the most menial labor about the cities and towns.

San Francisco, the great commercial center of the State and, indeed, of the whole Northern Pacific coast, without a rival from Valparaiso to Puget Sound, has a population of 150,000. In the value of foreign merchandise imported San Francisco ranks next to New York and Boston, surpassing Philadelphia, Baltimore, and New Orleans. The annual imports amount to about \$60,000,000. The entire trade of the northern and southern coasts centers here, and here the great valleys of the interior pour in their agricultural and mining products. The annual exports of treasure, including the silver of Nevada, are \$40,000,000, and of merchandise produced on the coast, \$23,000,000. Among the exports of 1869 were the following values: Wheat, \$8,734,348; flour, \$2,058,919; wool, \$2,370,165; quicksilver, \$747,671; furs, \$635,533; wine, \$499,628; brandy, \$209,610; copper ore, \$117,133; salmon, \$180,367.

The total number of vessels, of all classes, arriving annually is about 3,400, with a total measurement of 1,100,000 tons. There are 5,000 landholders in the city, and 29,000 depositors in savings banks.

The assessed value of real and personal property is \$104,000,000, more than two-fifths of that of the entire State, of which it has about one-fourth of the population.

Sacramento, the capital of the State, and the second city in size, has a population of about 25,000. It is situated on the Sacramento River, 130 miles north from San Francisco, at the junction with the American River. It is regularly planned, with wide streets and well-constructed brick buildings, and several important manufactures. The capitol building is one of the finest specimens of architecture in the Union. The city has many elegant suburban residences, with streets flanked by beautiful shade trees, and in this respect excels San Francisco, where the shade tree is almost unknown. This is the principal depot for supplying the agricultural and mining districts of the north and east. The several railroads centering here have materially increased the business of Sacramento during the last year.

Marysville, situated on Feather River, 75 miles north of Sacramento, with a population of 9,000, has considerable trade with the northern mines.

Stockton, on the San Joaquin, 125 miles northeast from San Francisco, with a population of about 8,000, is the principal depot for supplying the southern mines and the agricultural population of the adjacent valleys. It is the terminus of several railroads and is destined to remain one of the most important interior towns of the State.

The other principal agricultural towns are Los Angeles, Visalia, San José, Oakland, Vallejo, Napa, Petaluma, and Benicia, with a population

of from 1,000 to 5,000 each; and of the mining towns are Placerville, Sonora, Columbia, Nevada, Grass Valley, Downieville, Red Bluffs, Shasta, and Yreka, with a population of from 1,000 to 4,000 each.

It is difficult to exaggerate the commercial advantages of California, situated in a temperate climate midway between the northern snows and tropical heats, inviting to our shores the products of the arctic and torrid zones, confronted by the rich and populous empires of China and Japan, with over 400,000,000 of inhabitants, the commercial intercourse with which must swell into vast proportions. Occupying a position in the direct line of travel, by the nearest route, between Europe and the East Indies, California must command the trade of the Northern Pacific Ocean, and the cosmopolitan city of San Francisco must become the key to a great commerce, whose ramifications will penetrate every portion of the civilized world.

NEVADA.

which lies south of Oregon and Idaho, west of Utah and Arizona, is bounded on the west by California, extending south from the forty-second parallel of north latitude through seven degrees, or 483 miles, and is at greatest expansion from east to west, on the twenty-ninth degree of north latitude, 423 miles. Nevada was placed under territorial government per act of March 2, 1861, and by act of May 5, 1866, its area was increased by 12,225 square miles on the south, that extent having been detached from Arizona, and with these limits was admitted into the Union as a State under the act of March 24, 1864, by proclamation of the President dated October 31, 1864. Nevada embraces an area of 112,090 square miles, or 71,737,741 acres, being the third State in the Union in point of size.

The area of the State is naturally divisible into agricultural, mineral, grazing, timber, mountain ranges, and water surface. The surveyor general has made an estimate, based upon comparison of surveyed sections of the State with those unsurveyed, so far as the unsurveyed sections have been fully explored, and places the area of meadow land bordering upon lakes, rivers, and mountain streams, and the better class of sage-brush lands in close proximity to water-courses, as suitable for the purposes of agriculture, at 27,514 square miles; a region equal in area to the States of New Hampshire, Vermont, and Massachusetts. The grazing lands are supposed to approximate 37,498 square miles, large areas of which might be made available for agricultural purposes with the aid of irrigation, being a surface about equal to the State of Kentucky, and for the most part clothed with a fine growth of nutritious bunch grass and wild sage.

Mineral deposits are found in greater or less quantities in all the mountain ranges, extending into every quarter of the State, while the area exclusively mineral in character is estimated to be not less than 8,806 square miles, a surface equal to the State of New Jersey.

The area of lands embracing alkali flats and sand plains now unproductive is believed to approximate 3,361 square miles.

Timber occurs almost exclusively on the mountain slopes, and the area covered by forest is now estimated at 642 square miles. The Sierras, which occupy a narrow belt along the western boundary adjoining California and attain an altitude of 7,000 to 13,000 feet above the level of the sea, are covered with forests of the several varieties of evergreens found on the Pacific slope, attaining gigantic proportions. In the white-pine region, in the eastern part of the State, timber is found of good size and in considerable quantities, consisting of white pine and white

fir. It also occurs in various sections in the interior, generally along the larger water-courses, where it consists of cottonwood, birch, willow, dwarf cedar, nut pine or piñon, and a few other varieties, all of small growth and soft texture, but valuable for fuel.

The whole area covered by water approximates at 441 square miles, and the swamp or wet surface is estimated at 74,480 acres, which may be reclaimed and made productive. The mountain system extends in meridional lines from Humboldt River to the Colorado on the south, and from the Humboldt northward to the Owyhee, being generally rocky and sparsely covered with vegetation. One of the most remarkable features in the physical geography of this State is the uniformity with which mountain and valley succeed each other throughout the whole extent of the State, imparting picturesque grandeur to the landscape.

The principal river in Nevada is the Humboldt, which, rising in the northeastern part of Lander County, flows by a general westerly course of 250 miles, receiving from the north the Little Humboldt; thence it courses southwest 50 miles through Humboldt County into Humboldt Lake, situated on the line between the counties of Humboldt and Churchill. East Walker River rises in the Sierras, courses easterly, thence northerly, till it unites with the West Branch. The Main Walker is formed by the junction of these branches 35 miles southeast of Carson City, emptying, after a course of 45 miles, into Walker Lake. Lake Tahoe, situated on the line between California and Nevada, in the Sierra Nevada, 6,000 feet above the level of the sea, has an outlet through Truckee River, which flows northeast, into Pyramid Lake, in Washoe County, watering in its course a portion of Placer County, California, and the counties of Storey and Washoe, in Nevada. Carson River, likewise, has its source in the Sierra Nevada, south of Lake Tahoe, and in its general course runs northeasterly to Carson Lake, in Churchill County, receiving several tributaries and watering portions of Douglas, Ormsby, Lyon, and Storey Counties. The water-power of this river is estimated at 1,000 tons daily. Besides these streams are King's and Quin's Rivers in the north, Reese River in the interior, and Muddy and Franklin Rivers in the southern part of the State, each collecting the water from a considerable area of country. These streams are shallow and unnavigable, flowing through broad valleys, often with swift currents and occasional small rapids. The water of the streams, as well as of the lakes, is generally pure, fresh, and palatable, abounding in mountain trout and other excellent varieties of fish. Some of the streams terminate in beautiful lakes, while others disappear from the surface of the earth in their course through the sand, loam, and loose subsoil, appearing again suddenly a few miles further on, while sometimes disappearing after a course of a hundred miles. This peculiarity also characterizes some of the streams of Arizona, New Mexico, and of the Great Basin in Utah.

Lake Tahoe is surrounded in part by abrupt mountains, whose peaks are capped with snow the greater portion of the year, while the slopes are covered with extensive forests of pine, spruce, and fir timber. The waters of this lake attain a depth of 1,500 feet.

Pyramid Lake, northeast of Lake Tahoe, is 33 miles long, having a width of 14 miles, and Walker Lake, nearly as large, southeast of Lake Tahoe, are represented as of great depth. Carson and Lower Carson and Humboldt Lakes, which lie in a line directly north of Walker Lake, are shallow, and united by small sloughs or streams. There are numerous smaller bodies of water in different sections of the State, among which are Preuss Lake, partly in Utah; Goshoot Lake in the northeast, east of

the Humboldt Mountains; Ruby and Franklin Lakes in Ruby Valley, east of the same range; Pahrnagre Lake in southeast, east of Silver Cañon Mountains; Guano Lake in the northwest; and Lower and Middle Lakes on the line between California and Nevada, near the north boundary. In the valleys and plains, in nearly all parts of the State, during the wet season, extensive areas become covered by water, which disappears by evaporation, or sinks in the sand during the dry season. Many of these sheets of water are strongly impregnated with alkaline solutions, leaving, when evaporation takes place, an alkaline incrustation, and are known as alkaline flats. This State abounds in a great variety of springs, discharging cold and thermal waters, some of which are highly charged with medicinal properties, a few of these being noted for their curative qualities. These springs are found at all elevations, in size varying from 1 to 30 feet in diameter, and with depths varying from 2 feet to 200; springs widely differing in chemical composition within short distances, denote peculiar geological phenomena.

Nevada has twelve counties, those in the southwest being small; those in the north and east embrace several thousand square miles. Roop County, in the northwest, contains some fine valley land on Snake Creek, Middle and Lower Lakes, and in Surprise Valley, but as yet the county contains but few settlers. Humboldt County, joining Roop County on the east, has 150,000 acres of agricultural land, which may be largely increased by irrigation, and 650,000 acres of grazing land. This county is traversed by numerous ranges and spurs of mountains, among which are Humboldt, Trinity, Hot Spring, Cottonwood, Golconda, and Eagle Mountains. Stark Peak, in the Humboldt Range, attains an altitude of 10,000 feet above the level of the sea. Humboldt River enters this county on the east, flowing northwest, thence southwest to Humboldt Lake on the southern border of the county, which is further watered by the Little Humboldt and Quin's River, with their affluents. Paradise Valley, through which the Little Humboldt flows, Quin's River Valley, Grass and Pleasant Valleys, Big Meadows, and the Humboldt section embrace a large and valuable agricultural district, with an extensive region for grazing. The Central Pacific Railroad crosses this county along the Humboldt, a distance of 200 miles. The northeastern part of the State is included in Lander County, the greater part being watered by the Humboldt. Reese River drains an extensive area in the southwestern part of this county. The principal mountain ranges are the East Humboldt, Shoshone, Toiyabe, and Diamond Ranges. This region contains land which may be rendered available for agriculture; it has also extensive areas suitable for grazing. Considerable quantities of timber are found on the mountain slopes, and vast deposits of minerals. The Central Pacific Railroad crosses this county also, in a northeasterly and southwesterly direction. White Pine County lies between Nye and Lander, and includes the famous White Pine mining region, in which some of the richest silver mines in the State have been developed. Lincoln County occupies the southeastern part of the State, and borders on the Rio Colorado of the West for 75 miles, into which stream all the rivers of this county flow. The most important ranges in Lincoln are the Pah Rock, Pahrnagat, and Spring Ranges. Broad valleys intervene between these mountain ranges, some of them destitute of vegetation, except sage brush and occasional tufts of grass.

The surface of those plains is covered with drift and gravel, frequently interspersed with alkali flats. Esmeralda County, in the southern part of the State, west of Nye, has an area of over 6,000,000 acres, embracing a considerable quantity of land available for agriculture and grazing.

Along Walker River, around Walker Lake, and in Fish Lake Valley, timber is found in considerable quantities on the mountains, being principally piñon or nut pine. The chief value of this region consists in the rich deposits of gold, silver, copper, and lead found in nearly every mountain range. Douglas County, with an area of 576,000 acres, lies between Lake Tahoe and Esmeralda, and contains a considerable area of arable land and extensive facilities for irrigation. Carson Valley is 25 miles in length, through which Carson River courses and with its affluents fertilizes a large area. This county is strictly an agricultural and grazing region. Ormsby County embraces an area of 98,000 acres, of which one-twelfth is available for agriculture, a fifth is covered with timber, the residue consists of sage brush plains and barren mountains. Wherever the land in this county could be properly irrigated abundant crops have been produced. Churchill County lies north of Esmeralda and embraces an area of 42,000 square miles. Its western part includes Carson and Lower Carson Lakes and Carson River, while its eastern part is traversed by the Shoshone, Silver, and Augusta Mountains. A portion of this region is one of the best stock ranges in the State, a branch of industry receiving considerable attention. This county contains some rich mineral deposits. Lyon County, west of Churchill, with an area of 480 square miles, is rough and mountainous, with a dry soil. The agricultural and grazing lands are mostly found in Carson and Walker River Valleys and around Dayton, the county seat. A very considerable area of the sage plains may by irrigation be made to produce fine crops of cereals and vegetables. The mountain slopes and foot-hills are covered, in part, with a heavy growth of piñon and cedar timber. A great many ledges of gold, silver, and copper have been here discovered, some of which have been worked successfully. Storey County lies north of Lyon and west of Churchill, having an area of 400 square miles. Virginia, the capital of the State, is here situated. This county embraces the Comstock Lode, a rich and most extensively developed mineral region. About one-half the area, 1,620 square miles, of Washoe County has been surveyed. It is watered by Washoe and Pyramid Lakes, Truckee River, and Steamboat and Antelope Creeks. This county also is crossed by the Central Pacific Railroad from east to west on the north side of Truckee River.

The capacity of Nevada for grazing is attracting attention in all sections of the State, this branch of industry being there destined to be of great value. The foot-hills and mountain slopes are clothed with nutritious growth of bunch or buffalo grass, while white sage abounds in the valley. Sand-grass is found to cover large areas of the arid plains, and is exceedingly nutritious. It grows one foot in height, much resembling buckwheat. The white sage, while growing, is bitter and resinous, but upon being touched by the autumnal frost becomes sweet and tender, with the taste of barley. It is very nutritious, and sought after by stock in preference to hay. Extensive herds of horses, cattle, and sheep are fed by these native pastures on the mountain slopes and in the valleys all the year without artificial shelter. A drought has prevailed in some parts of an adjoining State during the present season, in consequence of which, it is estimated by the surveyor general, 100,000 head of sheep, 50,000 cattle, besides large droves of horses, have been driven into Nevada for pasture. The general surface of the State reaches an altitude of 4,000 feet above the level of the sea, and although the climate is varied, the mountain air is pure and somewhat rarified, but fresh and invigorating, the whole region being generally healthy. Febrile and epidemic diseases are scarcely known in the

State. Owing to the altitude and geographical position of the State, it has insufficient rain-fall during the season of growth for the highest development of vegetation, without the aid of irrigation, except in some small area advantageously located with reference to lakes or large bodies of water. In the early settlement of the State mining was almost the sole pursuit of the population, who were attracted there by the rich deposits of the precious metals. In the progress of events the lands contiguous to some of the mountain cañons, and on the lowest flats upon some of the largest streams, were found suitable for the culture of crops of grain and vegetables. But even these tracts, often of small area, were regarded as valuable only when situated in close proximity to some prosperous mining camp. Within the few years past great changes have been wrought in the agricultural prospects of Nevada. The peculiarities of the soil and climate are becoming better understood, and lands heretofore considered barren and irreclaimable are now in many instances rendered highly productive by means of irrigation. The sage-brush land is easily cleared. Those tracts covered by the heaviest growth of it have been found, with the aid of irrigation, to produce the best crop of cereals. Thus far, in the experience of the agriculturist of Nevada, the most successful crops are now found to be wheat, oats, and barley. Vegetables and all root crops are produced in perfection with irrigation and proper care. Large orchards, producing abundant crops of apples, peaches, pears, and plums, exist in the older settled localities in the western part of the State.

The soil along most of the streams, including the swamp or tule, or overflowed lands, is light and friable, consisting of rich alluvion, composed of clay washing, disintegrated rock and vegetable debris, and is rich, containing in some certain localities and during certain seasons sufficient moisture to render it productive without the aid of artificial irrigation. The tule land sustains a heavy growth of indigenous grass, thousands of tons of which are now annually cured for hay. The soil of the arid plains is found to possess elements of fertility, only requiring irrigation to render it productive. Where the waters of lakes and rivers are inadequate for the purposes of irrigation and mining it is believed that artesian wells will be the best means of relieving the deficiency. The seasons are wet and dry, although these changes are not strongly marked. In the northern and interior sections of the State the wet or winter season commences with January, and continues, with occasional intervals of fair weather, until May. Within this period the mercury ranges from zero to 15° or 20° below; snow falling high up in the mountain slopes, while rain descends in the valleys. During the dry or summer season, the average temperature at mid-day is 90° F., descending to 70° during the night. In the southeastern section of the State the temperature is higher in winter, there being but little frost or snow; but the summers are longer, and the mercury ranges considerably higher than in the northern part of the State. The autumns are beautiful everywhere throughout Nevada.

Mining will be the leading interest in Nevada. Valuable metals occur in all sections of the State, while in many places extensive deposits of lead, copper, iron, salt, and sulphur abound in greater or less quantities. Besides these, cinnabar, gypsum, manganese, plumbago, kaolin, soda, niter, alum, magnesia, platinum, zinc, galena, antimony, nickel, cobalt, and arsenic exist in various sections of the State. Clays, suitable for the manufacture of pottery and fire-brick, as well as sand for glass, prevail in abundance. Limestone, sandstone, and granite, suitable for building material, exist in nearly every part of Nevada; marble and

slate being frequently met with in considerable quantities. The silver mines first discovered in 1859, near the Comstock lode, in Storey County, have thus far proved the richest and most valuable. During the last year the mining industry has experienced fluctuations, incident to that branch of industry in all mineral regions. In some mines the product was less as they descend, while in others the yield steadily increases.

The Silver Bend district, in Nye County, which has been neglected for some time past, is now being worked, and is producing a considerable amount of silver. In some of the mines on the great Comstock lode the ore in the opened ground has been exhausted, but the miners are successfully sinking and drifting for fresh deposits of ore.

During the last year some important discoveries of mineral have been made, among which are the districts of Cope and Mineral Hill, in Elko County; Elgin, in Lincoln County; and Eureka and Secret Cañon, in Lander County. In many of these districts the silver-bearing ores are reported very rich. Several smelting works have been erected in the Eureka district, and the product of rich lead is reported as steadily increasing. Similar reduction works are in successful operation in White Pine County. The product of these mines is now shipped to New Jersey, San Francisco, and England for refining. Within the past year the product of the copper mines of Battle Mountain district in Humboldt County, near the line of the Central Pacific Railroad, has been largely increased. The ore is all shipped to England for reduction.

Since the date of our last report a new process for the treatment of silver ores has been introduced into Nevada, which, in the judgment of practical metallurgists, is destined to revolutionize the mining interests of the State. It is claimed that in the treatment of ores by means of the Stetefeldt furnace a saving of about \$12 per ton has been effected in the roasting of the ores, in less than one-fourth the time formerly required, by the Freiberg or reverberatory furnace. The Stetefeldt furnace for treating ores which require a chloridizing roasting is simple and inexpensive in construction. The finely pulverized ore, mixed with the required percentage of salt, is made to fall through a vertical smooth-sided shaft twenty feet in length, bringing each fine particle of ore and salt in direct contact with the products of combustion. Chloridizing by this process exceeds 90 per cent., 96 per cent. having been realized in some instances, and the desulphurizing and chloridizing of the ore require only two seconds of time. By the former method of roasting in the Freiberg or reverberatory furnace, it was extraordinary to obtain the result of 90 per cent., and generally required from six to eight hours to manipulate 1,000 pounds of ore. It is claimed for the Stetefeldt furnace, that one and a quarter tons of ore can be roasted in one hour; that it utilizes all the salt, by which a saving of 40 per cent. of that article is effected; reduces the loss of fine dust, gives better bullion, and consumes only 50 per cent. of the fuel required in the Freiberg furnace. The efficiency and great economy of this new process will tend to increase the product of bullion, and bring to the reduction works large quantities of the low grades of ores, which have hitherto been regarded as worthless. Four of these works are in operation and others are being constructed. It has been suggested that this new process may also be found adapted to the treatment of gold ores. The yield of gold and silver for 1869 was \$18,000,000. The mining interest has in the main been prosperous during the present year, and it is expected that the product will be equal to that of the year preceding.

During the last fiscal year the surveying operations were pushed for-

ward to the extent of the means provided by law for that branch of the public service, during which period there were surveyed 858,763 acres, of which nearly all is returned as available for agricultural purposes. In Humboldt Valley and vicinity the public lines of survey were extended over 1,000 square miles; on Maggie Creek, north of Humboldt Valley, 400 square miles; and 650 square miles in Ruby Valley and vicinity; five townships in Pine Valley, two in Pahrangat Valley, two in Grass Valley, and three in Cortes district, 60 miles northeast of Austin. The area yet to be surveyed in this State is 67,915,851 acres. Within the last fiscal year the disposal of public lands in Nevada under the various acts of Congress amounted to 13,118.19 acres, leaving yet to be disposed of an area of 67,078,391 acres, including some of the choicest agricultural and grazing lands and large districts of rich mineral tracts.

PUBLIC SALES DURING LAST FISCAL YEAR, AND RESTORATIONS.

During the past year there have been offered at public sale by the President's proclamation:

	Acres.	Acres.
In New Mexico.....	1,644,388	
In Colorado.....	143,000	
	<hr/>	1,787,388

And there have been restored to market lands heretofore withdrawn on account of railroad grants:

In Kansas....	660,000	
In California.....	201,000	
	<hr/>	861,000

Grand total of lands offered and restored.....	<hr/> <hr/>	2,648,388
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PREÉMPTION PRIVILEGES IN OBTAINING TITLES TO PUBLIC LANDS.

The préemption system is an outgrowth of American civilization.

In the earlier acts of Congress relating to the preservation and disposal of the public domain no settlement rights were recognized. The only préemption allowed consisted in priority of application to purchase at the district land office. As late as 1807 an act was passed punishing as trespassers persons making unauthorized settlement upon the public lands who, after notice specified in the act, should fail to remove from such lands within three months from service of notice. But as our population increased, and as that hardy spirit of adventure which has ever been characteristic of our people sought new fields for the development of its restless energy, encroachments upon the public domain became more and more frequent; and it was seriously questioned whether mere acts of settlement and improvement of the public lands were such grave offenses against public order. It was, however, a long time before the National Legislature, in obedience to popular judgment, would consent to legalize such settlement; yet, by means of relief laws, by removal of penalties, and by provision in certain cases where settlement had already been made for a preference right of purchase, the inchoate system was recognized as a growing necessity of American institutions. Of this temporary and remedial character were the acts of 1813, 1814, 1819, 1830, 1832, 1833, 1834, 1836, 1838, and 1840, and other special laws granting preference rights of purchase, conditional upon proof of actual settlement, and the absence of valid adverse claims.

The policy of granting preëmption rights to particular tracts of lands as compensation for services, and in satisfaction of claims under governments from which our public lands were acquired, prevailed from the beginning of our national existence, and was derived from the practice of the English, Spanish, and French sovereignties. It was not, however, until September 4, 1841, that rights of individual settlement as the basis of a just legal claim upon the Government, giving a preference right to purchase the land so settled upon, were fully recognized as a part of our permanent policy and legislation.

By the tenth section of the act of 1841, (U. S. Statutes, vol. 5, page 455,) the preëmption system of the United States, now so universally known, was fully established substantially as at present administered, giving to each person qualified under the statute a good and valid preëmption to any tract of agricultural land not specially reserved, to the extent of 160 acres, or one quarter-section, upon compliance with the requirements of the statute. This right was confined to lands surveyed at date of settlement.

The requirements and terms of the law are too well known to need recapitulation; yet, as matter of public information, to be sought in this report, may be briefly recounted. The person seeking the benefits of preëmption must be the head of a family, a widow, or a single man above the age of twenty-one years, a citizen of the United States, or must have declared his intention to become such, and not the owner of 320 acres of land, and one who has not removed from his own land in the same State or Territory to reside on the public lands. He must be an actual settler upon the tract claimed, in good faith, to appropriate it to his own use and benefit, and not for purposes of sale or speculation, all of which facts he is required to establish to the satisfaction of the register and receiver of the district office before his entry can be admitted.

Subsequent to the act of 1841 the right of preëmption settlement upon unsurveyed land was granted in particular States and Territories by special enactment, and finally, by act of June 2, 1862, all the lands of the United States to which the Indian title has been or shall be extinguished are made subject to the operation of the said act of September 4, 1841, with a saving of all stipulations, restrictions, and conditions of said act. By act of June 21, 1866, the disposal of the public lands in Alabama, Mississippi, Louisiana, Arkansas, and Florida is, however, restricted to homestead entry.

This legislation gives, with the exception above noted, uniformity to the great preëmption system; and with the rules and regulations established by this office, under the sanction of the head of the Department, greatly simplifies the administration of the law, by relieving the executive officers from the necessity of consulting a multitude of statutes to learn their application to the particular State or Territory from which the case is reported. But, as these rules have themselves been constructed from time to time under the operations of these various statutes, it seemed desirable to this office that something like a codification of the entire system should be attempted; and a draught of a bill was accordingly prepared for legislative consideration in May last, completely revising and consolidating in one measure all the important features of the law as it stood, and proposing such changes as experience has suggested in the course of a long administration of public duties connected with the land system. The changes suggested were mainly these:

Fixing a limitation within which claims for preëmption on unoffered lands shall be proved up and payment made.

Declaring specifically what is held as a rule of the office, that the filing of a declaratory statement by a qualified preëmtor upon a tract properly subject to such filing, shall be deemed an exercise of his right, and shall, upon consummation or abandonment of his title, so initiated, disqualify him from again claiming any rights as a preëmtor.

Declaring any reservation or withdrawal whatever, by competent authority, a bar to preëmption claim; but providing that, upon release of such reservation or withdrawal, preëmption or homestead rights shall be permitted to attach from the date of noting on the records, books, and plats of the district office the fact of such release.

Providing that the proprietor of any mechanical, manufacturing, or commercial establishment shall be entitled to preëmt and enter not exceeding 80 acres in compact form by legal subdivisions of the land actually so used and occupied by him, as a site for his business occupations.

Declaring that no preëmption right shall attach by virtue of settlement made after receipt at the district office of the President's proclamation for offering of any lands, and prior to the date of such offering; nor by virtue of any settlement made between the date of publication of any notice for restoration of any tract to private entry and the day fixed for such restoration.

Authorizing entry of actual improvements only, by legal subdivisions, by such settlers as shall be found to conflict in their claims where settlement was made before survey or while lands were not subject to preëmption at date of settlement and are afterward released, and providing for joint entry by coterminous proprietors when necessary. Also providing for including in such entries, where division is made, such contiguous tracts, not claimed adversely, as shall make the entry of each party equal to 160 acres, as allowed by law.

Making the exercise of the preëmption right a bar to the acquisition of title under the homestead laws, and *vice versa*.

Providing a limitation of the right of appeal, regulating the time and manner in which appeals may be taken to the Commissioner of the General Land Office, and from his decisions to the Secretary of the Interior.

Prescribing the time in which the rights of "heirs" in preëmption cases may be secured, by consummation of the claims of deceased preëmtors.

Forbidding commutation of preëmption filings to homestead entry, and requiring title to be consummated according to the act under which it shall be initiated.

Requiring an affidavit in homestead cases that the tract applied for is not in the adverse possession of any actual settler at date of the homestead application, and giving such actual settler sixty days in which to inaugurate a contest for priority of right to enter such tract, under the usual rules for conducting such proceeding, with the right of appeal as in other cases; also allowing the homestead applicant, in case his entry shall be declared invalid, the privilege to take another tract, with credit for the fees and commissions already paid.

Giving to the Commissioner of the General Land Office discretion to consider the equitable interests of parties making homestead entries, who, for good cause, have failed to comply with the strict requirements of law in the matter of continuous residence, and providing, in the exercise of such discretion, for the allowance of further time to satisfy the conditions of the act, where no adverse right has attached and no contest has been brought, and the absence of the settler has not exceeded the period of one year.

It was further proposed that the privileges of preëmption purchase be again restored in the States enumerated in the act of June 21, 1866, thus putting all the public domain within the power of acquisition by actual settlers, within a reasonable period, by purchase, instead of requiring them to await the uncertain possibilities of a five-years term of residence before consummation of title to their homes. Although, as to homesteads, the commutation provision here exists, yet it is believed the revenues of the Government would be materially augmented from the sale of these lands, and at the same time the substantial objects of the homestead law, securing actual settlement and improvement, would be attained.

The draught of the bill referred to was introduced so late in the session that it failed to receive general attention. A material provision in it, however, as to unoffered lands, was deemed of sufficient importance to justify immediate action, and the act of July 14, 1870, (U. S. Statutes for 1870, page 279,) was accordingly passed, requiring payment for preëmption claims upon unoffered lands within eighteen months after expiration of prescribed date of filing, which date was already fixed by law, viz., within three months after settlement upon surveyed unoffered lands and within three months from the filing of the plat of survey in the district office where settlement is made before survey.

Where the prescribed date for filing had already passed, one year from the date of the act is fixed as the period within which payment must be made.

Another important change in the preëmption laws was effected by the act of July 1, 1870, allowing payment of preëmption claims in agricultural college scrip, in the same manner and to the same extent as now authorized by law in case of military bounty-land warrants.

Instructions for carrying this act into effect were issued in circular form by this office on the 22d of July last, and have been promulgated through the district land offices and in the public prints.

PREËMPTION RULINGS.

In addition to rulings upon various points published in last annual report, the following have been added during the year:

In a case where lands were claimed by preëmption as against the right of the Western Pacific Railroad Company within the twenty-mile limits, but which lands were claimed as part of an alleged Mexican grant, and which claim was rejected subsequent to the date of the act granting lands to the railroad, it was decided by this office, and sustained on appeal to the Secretary, that the right of the road did not attach to such lands upon rejection of the alleged private claim, but that they were reserved from the railroad grant by the terms of the acts of 1862 and 1864, and became public lands, liable to homestead and preëmption entry.

A case was presented of a person of foreign birth who had served in the Army of the United States and was honorably discharged, but had not declared his intention to become a citizen. Held that under section 21 of the act of July 17, 1862, he was a qualified preëmptor, so far as regards the question of citizenship.

Of the original territory of the republic, as recognized by the treaty of peace in 1783, amounting to about 830,000 square miles, about 332,436 square miles, or 212,759,040 acres, are now embraced in the public land States that have been erected out of the public domain east of the Mississippi River. The great mass of the public land in these States has

been disposed of, though considerable areas remain in Michigan, Wisconsin, Alabama, and Mississippi. Taking into consideration the gradual decrease in the size of the farms in the States east of the Mississippi, there is reason to believe that the public land therein disposed of under the land laws has formed the basis of nearly or quite a million of separate agricultural properties. The preëmption policy was inaugurated at a sufficiently early period largely to affect the disposal of the public lands in these States.

By the operation of the treaties of 1803 with France, and of 1819 with Spain, there was added to the public domain the entire area of Florida, amounting to 59,268 square miles, or 37,931,520 acres, together with those portions of Alabama, Mississippi, and Louisiana south of the thirty-first parallel and east of the Mississippi River, amounting to about 350 townships, or over 8,000,000 acres, making a total addition of nearly 46,000,000 acres. Of this addition, a very considerable area in the southern part of Florida yet remains unappropriated by actual settlement. It has, however, probably given rise already to 150,000 separate homesteads.

It will not be far out of the way to estimate the separate land proprietorships that have been created by the public land system east of the Mississippi at 1,100,000. This conclusion is confirmed by comparing the number of farms in the public-land States east of the Mississippi returned in the seventh and eighth census reports, respectively. The aggregate number returned in 1850 was 448,405, and that of 1860, 690,253, showing an increase of 241,848, or nearly 54 per cent. in ten years. Applying this rate of increase to the decade just closing and we have an aggregate of 1,052,780 farms in 1870. But the rate of increase has been very considerably accelerated in the late slave States since the war, in the division of the old cotton and rice plantations, and in the very large appropriation of unoccupied public lands in 80-acre tracts under the homestead law. The estimate of 1,100,000 is, therefore, believed to be correct.

The public-land States and Territories west of the Mississippi have been under the operation of the preëmption system in some form almost from their first settlement. The public lands have generally been disposed of in small portions, adding enormously to the aggregate of proprietorship.

Of these political divisions, only Arkansas, Iowa, Louisiana, Missouri, Minnesota, Oregon, California, New Mexico, and Utah are represented in the seventh census. The number of farms returned within these limits was 107,155 which, by the reports of the eighth census in 1860, had increased to 243,530, or 127 per cent. in ten years.

In the absence of the returns of the pending ninth census, which will probably not be given to the public till some time after the publication of this report, it will be safe to assume that the number of farms in the States and Territories is not less than 500,000. Kansas, which was not represented in the seventh census, and exhibited in the eighth but 10,400 farms, has at least 50,000 in 1870. Nebraska, Nevada, Colorado, Dakota, Wyoming, Washington, Idaho, Montana, and Arizona will add at least 50,000 more, making the grand aggregate of separate rural proprietorships almost 1,700,000 in the States and Territories erected out of the public domain. These are mostly the fruit of our liberal land policy.

Full instructions as to the different modes of obtaining titles under various laws will be found in the appendix to this report.

The beneficent results of the preëmption policy, in the settlement of

the western lands, are thus seen in the great diffusion of land ownership. Of our population, one-eighth are actual owners of the soil, while about one-half, including the families of landholders, are therein directly or indirectly interested. The wonderful stability of our free institutions finds a satisfactory explanation in such facts as these. Our social and political system broadened its base by enlisting a larger scope of private interests in its preservation and permanency. It has developed, as the ruling class of our population, an intelligent, self-reliant yeomanry, whose steadiness in the exercise of self-government for nearly a century shows the influence of free civilization.

A still more liberal disposal of the public lands is found in the homestead law. It is becoming more evident every year that the rapid settlement of our western lands is of far greater importance than the revenue derived from their sale. Hence the donation to actual settlers of farms not exceeding 160 acres has been devised to stimulate immigration and to facilitate the transfer of the Government title to private ownership.

The requirement of five years' actual settlement and cultivation prevents the abuse of this law for purposes of speculation. In the operations of this homestead privilege we see the incentive to a still more rapid movement of immigration. The social evils of Europe are driving a large portion of the population of that continent into emigration. Our free institutions, practical social equality, facilities for acquiring a subsistence, and for accumulating wealth, with other advantages, are attracting the bulk of this emigration. While we may deplore and reprobate those evils, it will be very difficult to refrain from congratulating ourselves upon reaping collateral benefits. They seem like the systole and diastole of the world, driving its life-blood of population to circulate over its whole surface.

Instead of deploring the spread of civilization and the absorption of the areas of wilderness in the world, we should rather hail the day when the last squalid remnant of savage life shall have given place to industry and commerce, to a complete and normal system of production and exchange, in which the means of subsistence will be abundant and diffused, and the one-sided activities which now disturb the markets of the world be superseded.

ENDOWMENTS BY ACTS OF CONGRESS IN THE CAUSE OF EDUCATION.

At the close of our Revolutionary War the statesmen of that age realized the importance of giving a liberal land subsidy in aid of a general system of education, regarding it as essential to the perpetuation of free government. Accordingly there was inserted in the land ordinance of 1785 a stipulation, that the 16th or central section of 640 acres in every township of six miles square—23,040 acres—should be granted for the support of schools.

As settlements advanced westward from the valley of the Mississippi and on the Pacific slope, upon the expansion of our national boundary, new communities arose distant from the center of our political system, and in regard to these the legislature since deemed it proper, by suitable enactments, to enlarge the school allotments to two sections, or 1,280 acres in each township. The general principle recognized in our legislation in this respect is this: In the case of Territories the school sections are merely held by law in reservation and exclusion from disposal for any other purpose, but when a Territory becomes a State, and as such is admitted into the Union, the school grant becomes

absolute and indefeasible. The aggregate endowments for the support of common schools already set apart and added to the areas which will pass for that object under the principles of existing legislation, in aid of instruction in higher branches of learning as taught in colleges and universities, and including the agricultural and mechanic college grants, by act of 2d July, 1862, may be set down at 78,576,802 acres, and should the benefits of said act of 1862 be extended to the several existing Territories when they become States, the area will be augmented to 79,566,802 acres, a greater surface than the aggregate areas of New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, and Pennsylvania, and, as heretofore reported, of larger extent than the territory in the British European islands. By such means are the higher elements of social order secured and an impulse given beyond estimate to American civilization.

BOUNTIES FOR MILITARY SERVICES.

Among the earliest measures of land administration was introduced the principle of granting bounties to the officers and soldiers of the Revolutionary War, thus recognizing, in a graceful and substantial manner, their inestimable services in the cause of freedom. This principle has been extended to services in the war of 1812 with Great Britain, with Mexico in 1847, and for services in Indian wars from the year 1790, and prior to the passage of the military bounty-land law of March 3, 1855.

The total quantity of land granted for military services, including scrip, into which many Virginia military warrants have been commuted, and the grants made in the Virginia military district, (Ohio,) may be summed up as follows:

	Acres.
Act of September 16, 1776, revolutionary.....	2, 095, 120
Act of February 18, 1801, Canadian refugees	57, 860
Scrip acts of 1830, 1832, 1833, 1835, and 1852.....	2, 459, 511
Act of August 10, 1790, Virginia military district, (Ohio)..	3, 669, 848
Act of May 6, 1812, war of 1812	4, 846, 720
Act of March 5, 1816, Canadian volunteers.....	75, 792
Acts of 1847, 1850, 1852, and 1855, all wars.....	60, 259, 110

Aggregate granted for military services from the earliest period of our history to the end of the last fiscal year...	73, 463, 961
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The recognition of this principle of reward to our national defenders has been still further recognized, and brought down to the present day, in so modifying the original homestead law by section 25 of the act of Congress of July 15, 1870, that officers, soldiers, and sailors who have served in the Army and Navy of the United States for ninety days, and remained loyal to the government, can enter for actual settlement and cultivation, as required by the homestead enactment, 160 acres of the United States reserved sections, or double minimum lands, along railroads, instead of 80 acres, the latter being the quantity to which civilian settlers are restricted.

INTERNAL IMPROVEMENT LAND GRANTS.

By the acts of Congress approved August 8, 1846, and August 3, 1854, a grant was made to the State of Wisconsin "to aid in the im-

provement of the Fox and Wisconsin Rivers, and to connect the same by a canal." This grant has been finally adjusted, and under the same 683,728.42 acres have been transferred to the State. The grant "to aid in the construction of a breakwater and ship canal at the head of Sturgeon Bay to connect the waters of Green Bay with Lake Michigan" has been finally settled, and the full quantity duly certified to the State of 200,000 acres.

Congress, by the acts of March 3, 1863, and July 3, 1866, granted to the State of Michigan 400,000 acres "to aid in building a harbor and ship canal at Portage Lake, Keewenaw Point, Lake Superior," to be selected in the upper peninsula, and of lands to which homestead or pre-emption rights did not exist. Of this quantity 325,108 acres have been duly transferred to the State of Michigan, leaving a residuum of 74,892 acres yet to be certified, and which is in process of adjustment.

The grant made July 3, 1866, as heretofore reported, for 100,000 acres "to aid in constructing a ship canal to connect the waters of Lake Superior with Lac la Belle" has been finally adjusted and closed.

By the act of Congress approved February 9, 1867, the 500,000 "internal improvement" grant of September 4, 1841, was extended to Nebraska. This concession, it has been ruled, should not be charged with the quantity granted by the act of April 19, 1864, (13 U. S. Stat., p. 47,) because, as this last-mentioned grant was for purposes distinct from those embraced in the act of 1841, under this grant to Nebraska, the State has made selections equal to 386,967 acres, which are in process of adjustment. The liberality of Congress in aid of internal improvements is shown in the grants for that object.

Acres.

Under the grant of September 4, 1841, (5 U. S. Stat., p. 453,) there will inure, when fully satisfied, the quantity of	7, 306, 544. 67
To this add prior grants for roads and improvement of rivers	623, 716. 14
Des Moines improvement in Iowa	833, 079. 70
Fox and Wisconsin improvement	683, 728. 42
Canal purposes	4, 405, 986. 00
Total	13, 853, 054. 93
Estimated for wagon roads	3, 857, 213. 27
Evidence of title already furnished in aid of railroads ..	23, 220, 984. 15
To the above may be added the estimated area yet to inure under existing laws in aid of the construction of railways and wagon roads	198, 165, 794. 67

SWAMP AND OVERFLOWED TRACTS.

Grants by acts of March 2, 1849, September 28, 1850, and March 12, 1860. (9 U. S. Stat., pp. 352, 519; *ibid.*, vol. 12, p. 3.)

The work of adjustment under the different grants relating to swamp and overflowed lands has been prosecuted with diligence. During the year ending with this report, there have been selected 142,281.88 acres, making the aggregate selections now on our files since the first swamp concession of 60,459,868.84 acres. The details of office labors show that since last report there have been approved 474,598.87 acres, and that 657,733.81 acres have been patented to the States properly entitled. The work on swamp claims in the Southern States—long held in

suspense—has been resumed, and the unadjusted swamp interests of that region are in process of examination, looking to a speedy and definitive settlement.

Under the indemnity acts of March 2, 1855, and March 3, 1857, there have been indemnity awards made within the year amounting to \$16,139 51 cash, and 7,039.41 acres. The total amount of indemnity adjusted since the passage of the indemnity act is \$728,491 16 for cash entries of swamp, and 637,261.81 acres for swamp located with bounty land warrants and scrip, by which the States entitled to the same can locate that quantity of land in lieu of swamp lands disposed of by the United States. By the ruling of the Secretary, in his letter of the 21st June last, in the Green County case, the lands for which indemnity is sought must affirmatively be shown to be swamp by the field notes of public surveys, in addition to the ex parte testimony in such cases heretofore submitted. The effect of this just and salutary ruling will, it is believed, reduce by one-half the indemnity awards.

The act of 23d July, 1866, to quiet land titles in California, has introduced into our operations a class of cases unlike any from other States, and is giving occasion for expensive and laborious investigations on the part of the surveyor general. This is, in a measure, owing to the anomalous climate and peculiar characteristics of the soil in that State, which make it the more difficult to decide what lands are and what are not confirmed by the act referred to. In some investigations, heretofore held, instances have occurred where lands have been claimed as unfit for cultivation, by reason of periodical overflow at the planting season, which are under a system of irrigation.

As in previous reports, we cannot but reiterate the necessity for such legislation as will more clearly define the class of lands intended to be conveyed by the swamp grant. So long as the Executive Department is left to the indefinite terms of existing laws, controversies, entailing expense and embarrassment, both to individuals and the Government, must continue to occur. The commendable motives which gave rise to the swamp grant have not, it is to be regretted, met with that realization in the fulfillment which its projectors hoped for.

In addition to the reclamation of isolated swampy regions, and the consequent improvement in climatic and sanitary conditions, the greater and more national benefit was sought in controlling and directing the waters of that great channel of inland commerce, the Mississippi River and its main tributaries. With each succeeding year, and in proportion to the growth and development of the nation, does this question increase in magnitude. It is a question not of local interest alone, but has an importance affecting the national weal second to none of the internal improvements which have claimed the attention of our legislators. To meet the exigencies of the case requires the most critical engineering skill, with reference to the physical obstacles to be overcome, while the best statesmanship of the land is required to frame such regulations as may satisfactorily bring about the results sought for.

In this connection it may be pertinent to refer to some of the plans adverted to in our annual reports for 1867 and 1868, which, in the discussion of this subject, have been recommended for the accomplishment of this desideratum, to the end that the public mind may be directed to the importance of the project, and led to a realization of the magnitude of the results to be attained.

MINERAL RESOURCES OF THE UNITED STATES.

The extent of our mineral resources is in general but imperfectly

apprehended, notwithstanding the continual accumulation of knowledge on this subject. Even our splendid agricultural capacities, with advantages of soil, climate, and geographical position, will probably be surpassed by the majestic results of our mineral industry when once a scientific system shall control our enterprise.

GOLD AND SILVER.

The discovery of extensive deposits of gold and silver on the Pacific coast, at the middle of the present century, attracted immigration on a large scale from the older States and from foreign countries, even reversing the westward course of immigration in the old world, and drawing the Chinese and Japanese to work in the harness of western civilization.

The first phase of this mineral enterprise, however, was feverish, superficial, and demoralizing. The placer deposits of gold cropping out upon the surface were attacked by multitudes of all classes, ages, and nationalities, under a perfect furor of speculative acquisitiveness. This unscientific exploitation, besides being the occasion of social demoralization, not merely local in its effects, but affecting more or less the tone of civilization, has resulted in a waste of the precious metals, amounting to more than \$300,000,000. The breaking up of this system of mining by the exhaustion of the surface deposits, though necessarily accompanied by a decline in the rate of annual production, is to be regarded, on the whole, as a very hopeful indication. The place of this irregular, spasmodic, and unintelligent speculation will gradually be occupied by scientific and regular enterprise, bringing into requisition a grand combination of chemical, metallurgical, and geological intelligence with financial skill. It is hoped that this change will be sufficiently rapid to prevent the necessity of legislative interference to arrest and prevent the enormous waste of our mineral resources. The importance of this branch of enterprise is seen not only in the support of a large special class of industrial population, but also in the influence which it has upon the monetary and financial condition of the whole world. The metallic base of the world's circulating medium is liable to dangerous fluctuations from irregular production. A steady expansion of this production gives an increasing relief to the populations burdened with heavy national debts. Hence we look with uneasiness upon any permanent decline in our production of the precious metals. We are cheered to find that vein mining is now pursued upon intelligent and scientific principles, and that even placer mining is losing that purely speculative character which has so long injured it in public estimation.

The causes of the general decline of our production of the precious metals are enumerated under five heads by the Special Commissioner of Mining Statistics in his report for 1869, viz.: 1. The exhaustion of surface deposits. 2. The reaction from excited speculation and the consequent collapse of many dishonest schemes. 3. The increasing and novel difficulties attendant upon the management of deep mines and in the reduction of refractory ores. 4. The lack of communications, capital, and knowledge necessary to the extraction in large quantities of low-grade ores—the only stable form of mining. 5. The litigation which retards mining enterprise within the public domain.

The Commissioner is careful to state that the decline of production cannot be attributed to any exhaustion of our mineral resources. In regard to these he tells us that "the half has never been told." But

boundless as are these resources, they can be unlocked only by a careful recognition and compliance with the laws of their deposition.

The bullion product of the States and Territories west of the Rocky Mountains for the year 1868 was estimated by the Commissioner at \$67,000,000, showing a decrease over the estimate of 1867 of \$8,000,000, and over that of 1866 of \$16,000,000. The estimate for 1869, not yet published, is stated in the newspapers at \$63,500,000, representing a still further decline of \$3,500,000. This estimate assigns to California, \$20,000,000; to Nevada, \$14,000,000; to Washington and Oregon, \$4,000,000; to Idaho, \$7,000,000; to Montana, \$12,000,000; to Colorado and Wyoming, \$4,000,000; to Arizona, \$1,000,000; and to miscellaneous sources, \$1,000,000. In the summary of operations for 1869, prepared for the Commercial Herald and Market Review of San Francisco, the yield of California precious metals is placed at \$23,000,000, and a decline of from \$6,000,000 to \$8,000,000 for the Pacific slope is estimated. This latter estimate is derived from the manifests of uncoined bullion shipped by Wells, Fargo & Co.'s Express, the amounts for 1868 and 1869, respectively, being \$38,543,228 and \$30,976,036. The significance of this fact, however, is destroyed by the other fact that a rival express company, the Union Pacific, has already taken away a considerable portion of the business of the older company. The coinage of the San Francisco mint in 1869 and the first half of 1870 shows a very great increase; during the former year it was \$14,363,550, and during the latter half year, \$10,019,000.

The aggregate production of gold and silver in the United States since the discovery of the California deposits in 1848 is estimated as follows: From California, \$950,000,000; from Nevada, \$125,000,000; from Montana, \$92,000,000; from Idaho, \$58,500,000; from Oregon and Washington, \$38,000,000; from New Mexico and Arizona, \$8,000,000; from Colorado and Wyoming, \$10,000,000; from all other parts of the country, \$60,000,000; total, \$1,341,500,000. The gross products of the Australian gold and silver deposits, from their discovery in 1851 to the close of 1868, is stated by R. Brough Smyth, esq., secretary for mines of Victoria Colony, at £147,347,814, or about \$725,000,000.

Some new discoveries of gold and silver deposits are reported in the older auriferous and argentiferous regions of the Pacific slope. In some cases abandoned mining enterprises are renewed and found to be very profitable with the improved processes now in use. The argentiferous lead mines of the Aligal rancho, in the county of Monterey, California, were first discovered in 1803, by Captain Ortego, of Santa Barbara, and from the top ore silver spoons had been made by the Mexicans by smelting, as far back as 1821. These were mentioned, as in the possession of old families of the country, by De Mofras, Forbes, and other writers, before 1848. Attempts were made to work these mines by the Mexicans, in 1830, and by the Americans, in 1854, and again in 1862 and 1863. But in those days any ore paying less than from \$300 to \$500 per ton was looked upon with contempt. But this mineral with the neighboring deposits, the argentiferous lead mines of Cerro Gordo and Lone Pine, are found to overpay in final results some of the higher grade ores. The Cerro Gordo mineral is smelted into pigs and sent monthly 300 miles to Los Angeles, and thence shipped 300 miles further to San Francisco. Yet it pays a handsome profit, although the mines are 7,000 feet above sea level, involving a great expense of wood, provisions, labor, transportation, &c. The ore yields about 500 pounds of argentiferous galena to the ton, and the latter embraces about \$100 to \$150 in silver. This fact, among many others, appearing from the correspondence of this

office and from newspapers, indicates that the scientific exploitations of low-grade ores may yet be looked to as the salvation of the mining interest. Considerable sensation was created by the accounts of a secret expedition fitted out ostensibly for Arizona, but really for New Mexico, the purpose being to work the silver mines fifteen miles beyond the Arizona line, near Apache Pass, where the formidable chief, Cohies, has his stronghold. Samples of ore from these deposits were shown in San Francisco, which indicate great richness. The ledges are said to be from 50 to 300 feet in width, and situated in a mountain of quartz, the base of which covers an area of 400,000 square yards, with a height of nearly 1,000 feet. From the base of this mountain, spurs shoot out, the croppings of which are said to have assayed \$200 per ton, while the interior ore has rivaled the fabulous richness of the White Pine, reaching over \$2,000 per ton. Great excitement was created, almost depopulating several places in Arizona. This seems to indicate an eastward movement of argentiferous discoveries.

Gold and silver deposits are extensively worked in other parts of the world, but our country is supposed to produce between 40 and 50 per cent. of the entire annual product of the world. Gold has been found in greater or less quantities in half the States of the Union, but the richer deposits of both gold and silver have all been found within the public land States and Territories. The influence of an enormous addition of \$1,350,000,000 in 22 years, has already been felt in revolutionizing the financial settlements of the world. The drain of specie to the East, a problem as old as the days of Pliny, which has not yet received its solution, still continues. Oriental nations are still large exporters of their peculiar products and immense absorbers of the precious metals. Our nearness to oriental markets, secured by our position on the Pacific Coast, has enabled us already to take advantage of this circumstance. It is important that our gold and silver productions suffer no serious decline, and hence we anxiously await such improvements in mining processes as will give us a regular increase of production.

CINNABAR.

On the Pacific slope there is a marked distinction between the nobler and the baser metals; gold and silver being classed in the former, and all others in the latter category. The general distinction between precious and useful metals is sufficiently graphic. Among the useful minerals, mercury seems to have acquired a sort of preëminence. The production of cinnabar, the red sulphuret of mercury, from which that metal is smelted, has, during the past year, been declining.

The product of the New Almaden mine is perhaps less than that of its leading rival, the title to the latter being in controversy. The X L C R mine, is in Lake County. The Manhattan mine, in the vicinity, has commenced operations with new machinery and new processes. The Phoenix mine, in Napa County, and a new mine, unnamed, between Vallejo and Benicia, are yielding promisingly. The San Juan Baptista mine, near San José, also yields a few flasks monthly.

New localities in California have lately been prospected with success in search of cinnabar deposits. Rich ores are said to have been discovered at the Cerro Benito mine, and also in the San Rafael Mountains, about 30 miles north of Los Angeles. The latter is highly spoken of, as also an outcrop at City Creek, near San Bernardino. These discoveries are made slowly, on account of the lack of skill in de-

testing the cinnabar rock by many of the prospectors. The supply of quicksilver in California is far short of the demand, hence the search for new deposits is keen and indefatigable. The total monthly product of California has averaged, probably, less than 2,250 flasks per month.

COPPER.

Copper was the metal in most general use among the ancients. The earliest copper mines on record were on the island of Cypress, and were extensively worked by the Greeks. The annual production of the world does not exceed 32,500 tons, valued at \$13,000,000, averaging about \$400 per ton. The richest deposits in this country are found in the Lake Superior copper region, yielding native copper in true veins in trappean rocks, associated with conglomerates and sandstones of the lower silurian age. These constitute the great center of copper production in this country. The copper deposits of the Mississippi Valley, chiefly pyritous in the lower silurian rocks, are worked to a very limited extent. Of the cupriferous deposits of the Atlantic States, embracing copper-bearing veins of the metamorphic paleozoic age in the Appalachian Mountain system, those of New Jersey and Connecticut are now abandoned. Veins traversing the new red sandstone and older metamorphic rocks, in Chester and Montgomery Counties, in Pennsylvania, have been extensively worked of late years. There are large deposits of copper ore on the Pacific slope, but generally of too low a grade to render profitable any system of working them that does not involve a very considerable capital and elaborate scientific processes. They will probably await the dawning of perfected mining enterprise.

TIN.

The value of the tin produced throughout the world is estimated at \$8,215,000 per annum. In the United States tin has been discovered and mined in several localities. In the mineralogical cabinet attached to this office are beautiful specimens of this metal, from the ore as it comes from the mine to the fabricated utensil ready for use. In California extensive leads of tin ore have been discovered in the northeastern part of San Diego County. A mining district has been organized, and two companies have commenced working these deposits; specimens from the Vanderbilt ledge, owned by the California Company, are pronounced by assayers to contain as much as 80 per cent. of the pure metal. Preparations have been made for working these mines upon a more extensive scale, and to smelt the ores at the mines.

LEAD.

The annual value of lead produced throughout the world is estimated at nearly \$22,000,000. The argentiferous lead ores are more widely diffused throughout the States and Territories on the Pacific slope than any other mineral deposits, and greatly resemble in character the deposits of the Hartz Mountains, in Germany, where their abundance and richness are greatly celebrated. Nevada, Utah, Arizona, and Catalina Island, are superior in value to the deposits of the Eastern States, and their exploitation is encouraged by the amount of silver contained in them. Most of the Nevada lodes contain galena. The ores of Utah are also galena, and in a finer condition than those of Nevada, being altogether free from the antimonial adulterations of the former. They contain considerable quantities of phosphate of lead, and are rich in silver, yielding from 50 to 250 ounces to the ton.

The lodes of Arizona contain large bodies of sulphate of lead, and

are rich in galena, but not so rich in silver as either the Utah or the Nevada ores. The ores of Catalina Island are a mixture of galena with the sulphates and carbonates of lead. These ores are brought to market in such an unmerchantable condition as to afford but little chance of profitable trade. Scientific processes, however, will doubtless correct this, and give to the trade a solid and substantial basis in a more effective production. The present defective system is limited to a coarse crushing and an imperfect separation of the ore from its matrix, much of which is sent to market. The question of smelting at the mines has been started. Many of the ores are of such low grade that it would be much more profitable to ship them to localities where they might be smelted in connection with pure ores. These questions all point to the necessity of higher skill in metallurgical processes, which can be secured only by extending the means of acquiring a professional engineering education. The importance of cherishing this industry is seen in the fact that we annually import from Europe from 15,000 to 20,000 tons of lead, besides about 12,000 tons from China and Japan. It is desirable to diversify our industry by producing everything at home of which our resources will admit.

IRON.

The present age has been called the age of iron, from the enormous use of the mineral as compared with the previous ages of the world. It is the most abundant of all metals, if we regard only its adulterated deposits; yet, strange as it may seem, pure iron is a greater rarity than pure gold. Its wide scope and great strength of affinities render its combinations very numerous. It has been attempted to show that the civilization of a people is in proportion to its use of this metal. It is used in enormous quantities in our railroads. It is superseding wood in the construction of ships, and masonry in the erection of land buildings. The annual production of iron is estimated at 9,500,000 tons, worth, in the pig, \$30 per ton, or a total value of \$285,000,000. Estimating the population of the world at 1,000,000,000, the annual production amounts to about 20 pounds *per capita*. England consumes about 189 pounds per head per annum; Belgium about the same; the United States about 100 pounds, and France about 69½ pounds.

If the annual consumption of the whole world should be brought up to the standard of England, the production must enlarge to 90,000,000 tons per annum. That such will be the case is scarcely doubtful, after a careful comparison of the present consumption of iron with that of former periods.

The prospective enlargement of iron consumption in the world raises the question of its supply. Those countries which abound in deposits of coal and iron ore, in close juxtaposition, will enjoy incalculable advantage in the immense industrial movement which will be developed by this expansion of iron consumption. Sweden possesses exhaustless supplies of the very best and richest primitive ores, but she has no coal, or at least no known deposits of that mineral. She must, then, either transport the coal and engage in manufacturing iron, or she must export her ore for raw material to supply foreign industries. The transportation of coal, the more bulky of the two elements, will probably be more costly than that of the ore, which represents a much greater money value in the same weight. The limit of iron manufacture with wooden fuel has been reached in Sweden, and hence her iron deposits can be looked to only in case of the decline of other sources of supply. In Russia, also, the lack of any considerable coal deposits, so far as yet

ascertained, forbids the hope of any considerable expansion of iron production. Her comparatively unexhausted forests, however, give ground for the expectation of some increase in the production of charcoal iron. The same general remarks apply to Austria and to the States of the Zollverein. Italy, Spain, and Algeria abound in ore, which must be transported to the foreign coal-field for working. France imported, during 1867, 7,000,000 tons of coal and 495,000 tons of iron ore, thus confessing her indebtedness to foreign jurisdictions for both elements of her iron industry, raw material and fuel. In Belgium the smallness of the coal-field and the vertical direction of the veins forbid any great enlargement of coal production, and rather indicate a decline from the present rates of production at no distant day. Belgium now produces as much coal as France, two-thirds as much as Prussia, and one-eighth as much as Great Britain, although her workable coal area is but 97 miles long and 12 miles broad, with veins not over three feet in thickness. She imports her ore and drives a very vigorous iron production, but external conditions forbid its great expansion. Prussia has a larger supply of coal than Belgium, and a remarkably good quality of abundant iron ore; but the probabilities are that she will scarce be able to supply the demands for iron of her own rapidly developing home industry. Upon England, then, will devolve for the present the task of supplying European industry with iron.

The following table gives an approximate idea of the iron production of 1866:

Countries.	Pig iron, in tons.	Wrought iron, in tons.
England	4,530,051	3,500,000
France	1,200,320	844,734
Belgium	500,000	400,000
Prussia	800,000	400,000
Austria	312,000	200,000
Sweden	226,000	148,292
Russia	408,000	350,000
Spain	75,000	50,000
Italy	30,000	20,000
Switzerland	15,000	10,000
Zollverein	250,000	200,000
United States	1,175,000	882,000
Total	9,521,371	7,005,026

From the above table it appears that Great Britain supplies nearly half the iron of the world's consumption. A careful survey of the sources from whence the British iron production is derived, shows that, in Wales, the local supply is not equal to the present consumption, and that large quantities are transported thither from all parts of the kingdom. It is the great local supplies of coal that attract iron importations into Wales. The Staffordshire region, by common consent, has reached its culminating point of production. The Scotch iron industry may enlarge, from the importation of ores, to meet its large supplies of coal. From all these regions, then, we can expect no very great expansion of iron production, especially such as will meet the increased demand which the world-wide extension of civilization, with its iron ships, its iron roads, and its iron machinery, will soon develop. The capacity of England, then, to meet this requirement, must be rested upon the continuance of productiveness of those two great iron districts, the Cleveland and the Cumberland regions. The Cumberland a red, hema-

tite district, is now yielding about 1,400,000 tons per annum. There are no present signs of exhaustion in these deposits, yet geological facts are adverse to their continued productiveness. They are found in pockets in the rocks, in irregular beds in, or adjacent to, the limestone. The extremely good quality of this ore, and the value of the iron it produces, will always restrict it to those more important uses for which a high price will be paid. It will, therefore, come into but limited competition with the great mass of iron production. The Cleveland ores, however, are far more abundant, and no geological reasons have been ascertained for doubting their practical inexhaustibility. They are lean and inferior in quality, but by skillful and economical processes they are made to produce a sufficiently good quality of iron at a cost below that of any other region. The consequence of this fact is seen in the production of 1,000,000 tons per annum, rapidly increasing; since 1850, nearly 30 rolling mills, beside 150 furnaces had been built. A large number of rolling mills and iron ship-building yards are in operation, and cities have grown up around this industry with a rapidity which commands even the admiration of the western pioneer, accustomed to observe the rapid strides of civilization in the wilderness. There are no data upon which to assign any particular limit to the growth of this Cleveland iron production. The general consideration, however, which points to the practical limitation of British iron production is found in the enormous amount of coal production within a workable coal area but little exceeding 6,000 square miles. That production has already exceeded 100,000,000 tons per annum. The present indications, however, are not unfavorable to the idea that Great Britain will be able to advance her proportion of the iron production of the world *pari passu* with the general advance. But admitting the extreme possibility, the incapacity of the other iron-producing countries to maintain the same rate of progress will leave an immense deficiency, which American enterprise alone is competent to fill. Since writing the above, the statistics of later British iron production have come to hand, showing that the total product of pig iron for 1867 was 4,761,023 and for 1868 it was 4,970,206 tons, showing an increase of 440,000 tons, tons in two years, or nearly 5 per cent. per annum. The product of raw material of mineral industry in Great Britain for 1868 is given in the following table:

Minerals.	Tons.	Valued at—
Coal	103,141,157	£25,785,289
Iron ore	10,169,231	3,196,600
Tin ore	13,953	770,205
Copper ore	157,335	642,193
Lead ore	95,236	1,150,768
Zinc ore	12,781	39,191
Iron pyrites	76,484	53,636
Gold quartz	1,191	1,000
Arsenic	3,300	9,710
Gossans and ochers	6,692	6,372
Wolfram	9	67
Fluor spar	60	42
Manganese	1,700	7,650
Barytes	14,235	8,728
Coprolites	37,500	71,500
Salt	1,513,840	927,227
Clays, fine and fire	1,012,479	317,770
Earthy mines not returned, estimated		650,000
Total value of mineral, raw material, produced		33,637,858

The absolute value of the products of British mineral industry in 1848, including raw material and the additional values of working ores into metal, was probably not less than £45,000,000 or \$225,000,000, exclusive of slate, limes, building stones, and common clays. The iron production of France, during fourteen years, was as follows:

Year.	Wrought iron.	Pig iron.	Year.	Wrought iron.	Pig iron.
	<i>Tons.</i>	<i>Tons.</i>		<i>Tons.</i>	<i>Tons.</i>
1855.....	537,000	850,000	1862	670,000	1,053,000
1856.....	569,000	920,000	1863	791,000	1,180,000
1857.....	557,000	1,000,000	1864	821,000	1,212,000
1858.....	530,000	875,000	1865	-----	1,168,000
1859.....	522,000	858,000	1866	-----	1,252,652
1860.....	580,000	860,000	1867	-----	1,142,800
1861.....	570,000	1,040,000	1868	916,645	1,274,333

During the year 1867 Prussia produced 812,029 tons of pig iron and 458,946 tons of wrought iron. The total value of the mineral product for that year was \$66,370,860. These statistics of foreign iron production prepare us for an intelligent estimate of the value of our own stupendous resources in this direction. It will be found, upon an intelligent survey, that we combine enormous deposits, both of coal and iron, in close juxtaposition, inviting the grandest development of iron industry the world has ever known. Our mineral treasures are gathered in a mighty elliptical bowl, the outer rim of which skirts the Atlantic coast to the Gulf of Mexico, and thence, crossing the Mississippi Valley, runs northward with the plains lying at the eastern base of the Rocky Mountains, and round by the great lakes to the place of beginning. The rim of this basin is filled with exhaustless stores of iron ore of every variety and of the best quality. In the midst of this great basin the carboniferous ores are fully as abundant as they are in England, but have hitherto been left unwrought in consequence of the cheaper rate of producing the richer ores from the rim of the basin along the Atlantic slope of the great Appalachian Chain of mountains. From the Hudson River to the heart of Georgia, the outcrop of magnetic ore extends 1,000 miles in length, traversing seven States in its course. Parallel to this is the great limestone valley, which lies along the margin of the great Appalachian coal field, in which lie buried masses of brown hematite, the abundance of which, especially in Virginia, Tennessee, and Alabama, staggers the imagination. Again, within the coal basin itself is a stratum of red fossiliferous iron ore, beginning in a thin seam in New York, and expanding in Alabama to a breadth of 100 miles, with beds often 15 feet in thickness. Beneath this bed, but still above water level, are thick coal seams exposed in mountain sides, which are covered with timber available for mining or for the manufacture of charcoal iron. West of the Mississippi is traced, through Arkansas and Missouri, a wonderful range of red oxide iron, outcropping often in mountains of almost solid ore, rising hundreds of feet above the surface, with deep and broad foundations, extending an undetermined distance downward into the earth. This range, crossing the Mississippi, culminates in ore beds which have excited the wonder of the world. Along the Adirondacks are beds of iron of the same character, completing the metallic circle to the magnetics of the Atlantic slope. Within this circle, and intermingled with the coal beds, are various local deposits of fossiliferous and hematite ores, the proximity of which to the coal beds

nas aroused the iron industry of the nation. On the Pacific slope, amid its glittering golden and silver deposits, iron has, as yet, been found in but limited quantities; yet, it is thought that a more careful survey of the mineral deposits of the Sierra Nevada will develop a respectable amount of iron ores, though probably not to be compared with the enormous resources of the eastern and middle slopes of our continent.

This rapid summary of our iron resources exhibits a latent industrial power, the results of which we can scarce conceive. We have, as yet, begun only to chip the rim of our great iron basin in a few places. The draught we have made upon these deposits amounts only to a slight abrasion of the mass, and yet our iron industry has begun to manifest something of its tremendous power of movement. The following figures from the "Miners' Journal, Coal Statistical Register for 1870," present the comparative production of pig iron in England and the United States from 1810 to the present time:

Year.	Country.		Year.	Country.	
	England.	United States.		England.	United States.
	<i>Tons.</i>	<i>Tons.</i>		<i>Tons.</i>	<i>Tons.</i>
1810.....	-----	*50,000	1852....	2,700,000	564,000
1818.....	300,000	-----	1854....	3,069,838	716,764
1820.....	368,000	-----	1855....	3,218,154	754,178
1825.....	581,367	-----	1856....	3,586,377	874,428
1827.....	690,500	-----	1857....	3,659,447	798,157
1828.....	-----	130,000	1858....	3,456,064	705,094
1829.....	-----	142,000	1859....	3,712,904	840,427
1830.....	678,417	165,000	1860....	3,826,752	913,774
1831.....	-----	191,000	1861....	3,712,390	731,564
1832.....	-----	200,000	1862....	3,943,469	787,662
1833.....	700,000	-----	1863....	4,510,040	947,604
1835.....	1,000,000	-----	1864....	4,767,951	1,135,497
1839.....	1,347,790	-----	1865....	4,819,254	931,582
1840.....	1,500,000	347,000	1866....	4,523,897	1,350,943
1842.....	-----	215,000	1867....	4,761,023	1,461,626
1845.....	1,512,500	846,000	1868....	4,970,206	1,103,500
1846.....	-----	765,000	1869....	-----	*1,900,000
1847.....	1,999,608	800,000			

* Estimated.

The following facts and figures, from the statistics collected by H. McAllister, esq., secretary of the United States Iron and Steel Association, exhibit something of the vast importance and value of our iron interest. The number of hands employed in the primary production of iron is thus estimated at 140,000 in all, divided as follows:

At the blast furnaces	12,500
Preparing ore and fuel.....	42,000
At forges and bloomeries.....	2,500
In rolling mills.....	58,000
Preparing fuel for rolling mills.....	25,000

Add to these an estimated population of 800,000 engaged in the process of iron manufacture to its finished state, and we have a total of 940,000 producers, a population equal to that of our largest cities, and exceeding

that of some of our new States. The money value of crude and manufactured iron presents a still more imposing array of figures, and challenges the attention of even the most casual reader. Thus the value of the pig iron alone manufactured in the United States during 1869 will approximate \$75,000,000; add to this the product of the rolling mills and forges, and we have a total of \$138,000,000; while if the value of all articles comprised under the general head of "Manufactures of iron" is included, we have a grand total of \$900,000,000 as the value of the iron trade for the year.

The estimated quantity of pig iron made in 1869 is given at 1,900,000 tons of 2,000 pounds, with an addition of 65 new furnaces. In the Mahoning Valley alone, an expenditure of nearly a million of dollars in furnaces has increased the capacity of that locality 91,000 tons. The advance in the Western States is correspondingly encouraging. Where within three years no furnaces existed in either Illinois or Indiana, there are now over a dozen in full blast and several new ones in progress of erection. Missouri has increased over 200 per cent. in production, and Ohio, Michigan, and Wisconsin each show a heavy increase.

In rails the production is tabulated per annum for the last sixteen years, showing the product in 1853 to have been 87,000 tons, while that of 1869 is 580,000 tons, an increase which, while gratifying, is but nominal as compared to the certain additional production of the next sixteen years. Of steel rails it is estimated that 50,000 tons have been laid during 1869, of which 35,000 tons were foreign and 15,000 tons were of American manufacture. It is estimated that by January 1, 1872, 150,000 tons of steel rails will be laid upon our American roads.

The manufacture of iron rails in the United States is comparatively of late origin. The home manufacture rose from 87,864 tons in 1853 to 580,000 tons in 1869. The importation of foreign rails has varied during the last twenty years, reaching as high as 358,794 tons in 1853, and declining as low as 10,186 tons in 1862. During 1869 it is estimated that the import exceeded 300,000 tons, or more than one-half the entire British export for that year. With such vast possessions of raw material, and with so fine a commencement of our iron industry, we may reasonably expect an enlargement of it during the coming advance of civilization which surpasses all present anticipation. In order, however, to estimate something of the availability of our iron resources, it will be necessary in the next place to study our immense deposits of coal, by which our iron ore is to be worked.

COAL.

In the report of this office for 1867 will be found tabular statements of our coal resources, derived from the latest information accessible at that time. Since then, however, the knowledge of our coal deposits has been greatly increased by actual and official exploration. The result of this exploration has been the development of unexpected deposits on the eastern slope of the Rocky Mountains, greatly transcending our previously known coal area.

In addition to our 200,000 miles of workable coal area, as reported in 1867, it is now ascertained that we have west of the Mississippi no less than 513,000 square miles of true coal, not lignites.

The following statement will indicate the general locality of this Rocky Mountain coal field:

State or Territory.	Area.	Coal area.
	<i>Square miles.</i>	<i>Square miles.</i>
Texas.....	237,000	30,000
Indian Territory.....	68,000	40,000
New Mexico.....	122,000	20,000
Kansas.....	80,000	80,000
Missouri.....	67,000	24,000
Nebraska.....	84,000	84,000
Iowa.....	55,000	24,000
Wyoming.....	67,000	20,000
Colorado.....	102,000	20,000
Montana.....	148,000	74,000
Dakota.....	150,000	100,000
Total.....	1,180,000	513,000
To which add approximate coal area of British America.....		737,000
Total area of Rocky Mountain coal field.....		1,250,000

If to this amount we add the 200,000 miles previously ascertained, we find that we have a workable coal area of nearly a million and a half of square miles right in the heart of North America. There are, besides this great Rocky Mountain coal field, a large number of detached basins, many of them larger than the anthracite coal field of Pennsylvania. It is probable that many of these are anthracite in character, containing fresh supplies of this superior mineral fuel, and looking to the extension of manufacturing industry west of the Rocky Mountains on a very large scale. Of the coal fields east of the Rocky Mountains, the New England basin, especially in Rhode Island, has lately developed an unexpected value. It has attracted especial attention in connection with increased activity in working the copper deposits of the neighborhood. No statistics of production are accessible in the preparation of this report which show the result of later operations, but reliable newspaper reports indicate increased activity and greater value in these deposits of Rhode Island anthracite than had hitherto been supposed.

In the anthracite coal fields of Pennsylvania we find a steady increase of production. The operations of the first year reported, 1820, embraced the exportation and shipment by canal, from the Lehigh coal basin, of 365 tons of anthracite. At the close of 1829 it is found that the previous ten years' operations embraced the marketing of 359,190 tons, of which 186,059 tons were from the Schuylkill, and 166,131 tons were from the Lehigh coal region. The great Wyoming region had just begun to demonstrate its capacity, by the shipment of 7,000 tons during the year 1829. The range of operations rapidly increased up to the present time, the Pennsylvania anthracites sending to market, in 1869, 13,221,386 tons, showing a grand aggregate for the decade of 185,078,962. In regard to this anthracite production, it seems evident that a revolution of mining process is impending, as significant and important as the change that has been going on in gold mining on the Pacific slope, from shallow places to the deep veins in the quartz rock. The great bulk of anthracite production hitherto has been from the working of outcrop deposits. This character of workings is susceptible still of considerable expansion from the prospecting of new outcrops. But from

the number of this class of deposits that have been exhausted, it is evident that no very great increase of production can be expected from them. The old method of mining by slopes will of course pass away with the exhaustion of these deposits. The extension of the shafting process will be necessitated when the mammoth coal vein at the base of the anthracite system of Pennsylvania is attacked. This immense mass of rich mineral, from 20 to 30 feet thick, has been scarcely touched in the previous operations of the anthracite region. To reach the synclinals of these deep beds, shafts from 500 to 1,000 feet will be necessary, from the lower points of which the dip coal of a wide area may be raised.

When this more elaborate mining system is once adopted, we may expect a great enlargement of this branch of our coal production.

The proximity of the anthracite regions to the seaboard has mainly absorbed the mining enterprise of the Eastern and Middle States. But the time has arrived when the prices of fuel will warrant the extensive exportation and shipment of the bituminous deposits further inland. The rapid increase in consumption of coal indicates that in 1885, 15 years hence, an increase of not less than 25,000,000 tons of coal will be demanded. To meet this demand it will not be safe to rely upon any increase of Pennsylvania anthracite production beyond 8,000,000 tons per annum, making the annual aggregate of that trade about 20,000,000. This will leave 17,000,000 to be supplied from the semi-anthracite and bituminous coals of the great Appalachian coal basin, the outcrop of which lies from 150 to 200 miles further inland than the outcrop of the anthracite. This immense basin, extending from Pennsylvania southwest into Alabama, embraces a workable area of about 60,000 square miles, of which 12,656 are in Pennsylvania, 12,000 in Ohio, 550 in Maryland, 15,900 in Virginia and West Virginia, 10,700 in Kentucky, 3,700 in Tennessee, 4,320 in Alabama, and 175 in Georgia. Its length is 875 miles, with a breadth varying from 30 to 180 miles. It is divided into six subordinate basins, and generally arranged into two groups of beds, separated by the Mahoning sandstone, the lower of which, corresponding to the white-ash formations of the anthracite regions, covers about three-fourths of the area. The aggregate production of this coal field in 1864 was somewhat less than 10,000,000 tons. The commercial demands of the country would seem to require a speedy enlargement of this production. There is no reason to doubt that within the next twenty years the annual coal production of this region will be increased four-fold. The northern coal field, embracing some 13,000 square miles, is in the lower peninsula of Michigan. Its coal deposits are less rich and valuable than in the Appalachian coal field, but will prove invaluable in meeting the local wants of the community. But little has as yet been done for its development, its annual production scarce exceeding 100,000 tons. The great central coal field, of 50,000 square miles, extends through Kentucky, Indiana, and Illinois, a length of 350 miles, with a breadth ranging from 150 to 200 miles. The coal measures here are about 900 feet thick, with an underlying paleozoic base of not over 3,000 feet, the base of the Appalachian basin, in Pennsylvania, being five miles thick. Its annual production is estimated at between 2,500,000 and 3,000,000 tons. The western coal field of Missouri and Iowa is probably a continuation of the last-named. It occupies an area of 45,000 square miles, of which 21,000 are in Missouri and 24,000 in Iowa. The coals of Arkansas and Nebraska are but the thin western edges of the great western coal basin. The annual production of this field does not reach a million tons. The coal deposits of the Pacific slope are as yet but

imperfectly understood, being not over 6,000 miles in extent. Our entire annual coal production has reached and exceeded 30,000,000 tons about one-half of which is raised from the Pennsylvania anthracite coal basin, with an aggregate area of less than 500 miles.

The coal production of Great Britain during 1868 is returned at 103,141,157 tons, of which 10,967,032 tons were exported. The coal mined in Belgium during 1867 amounted to 12,755,822 tons, of which two-thirds were absorbed for domestic consumption, and the balance exported. These limited European coal fields have evidently reached their palmy days of production. While the world's demand for coal is constantly increasing, they must either remain stationary or decline. The immense coal fields of the North American Continent will then come into requisition, adding enormous power and volume to our production and trade.

MINING LAW OF JULY 26, 1866, U. S. STATUTES, VOL. 14, P. 251.

During the past year under mining legislation many applications for patents were received, and for a large portion of the cases final titles have been issued to the claimants. As the liberal and salutary provisions of the law are becoming familiar to miners, the applications for patents are steadily on the increase.

As is usual in the administration of a new statute, many questions have been presented for decision under the mining law, of which the following are some of the most prominent :

TIME OF FILING ADVERSE CLAIMS.

A case has arisen in which the plat and field-notes of a claim were approved on different days by the surveyor general, an adverse claimant having appeared in the interim, and the question arose whether the right of the adverse claimant to appear was limited by the first or last of these dates. On this point it was ruled that the adverse claimant has the right to contest up to the date of the last approval, which is generally of the plat ; the field-notes being necessarily the basis of the same, and it being proper that such notes should first be approved.

The reference to an adverse claimant in the third section is simply by way of defining the duties of the surveyor general, and provides that if no adverse claimant has appeared at the expiration of ninety days, the survey shall be executed, thereby implying that if an adverse claimant has appeared the survey shall be suspended or omitted until the adverse interest is judicially adjusted in the manner directed in the sixth section of said act.

Inquiry has also been made as to whether, after the publication of the notice, and approval of the survey by the surveyor general, an adverse claimant could arrest proceedings for patent. In regard to this it is held that if the application for patent was a regular and *bona fide* proceeding, an adverse party could not stay executive proceedings after the approval by the surveyor general, but if fraud is proved in the application, the proceedings may be suspended to afford an opportunity to test judicially the rights of parties.

LOCATIONS AND PURCHASES SINCE JULY 26, 1866.

With respect to the validity of locations and purchases since the passage of the mining act, inquiry has been made whether ten or more men could locate 200 feet each on a ledge, one or two of them buy out the interest of the others, and then apply for and receive a patent for

all the ground by showing title by deeds. To this it was replied that, in regard to locations made since the date of the mining act, a patent may issue on any claim held agreeably to local mining rules and regulations of the district, State, or Territory in which it lies, whether it be held by purchase or location, provided that individual locations do not exceed the maximum of 200 feet, with an additional 200 feet to the discoverer, and that company locations do not exceed 3,000 feet in length along the lode, which is the limitation in the fourth section of said act of Congress. If, therefore, the mining regulations of a district are such as to allow ten or more men each to locate 200 feet on a ledge, and one or two of them buy out all the interest, and in that way obtain a *good possessory title*, which could be maintained in the local courts, then, and in that case, the claim is one that this office will be authorized to recognize under said mining statute.

The General Land Office cannot, under the law, issue a patent for a mining claim which is not in accordance with the mining rules and regulations in force where the claim is situated, or which were in force at the date of the location of the claim. Therefore, as the 2,000 feet in the supposed case would not exceed the maximum provided in the act of Congress, the only question for consideration is whether it would be sanctioned by the mining regulations of the district.

If the purchase effected in the manner suggested is good under the local mining regulations of the district, it will be considered sufficient in the General Land Office, provided that the \$1,000 expenditure has been made upon it as required by the act of Congress, said act limiting the right to apply for and receive patents to those who have previously occupied and improved their claims according to the local custom or rules of miners in the district where the same is situated, who have expended in actual labor and improvements thereon an amount of not less than \$1,000, and in regard to whose possession there is no controversy or opposing claim.

SECOND STAY OF PROCEEDINGS DENIED.

A case was brought to our attention in which it was shown that, after the application for a patent had been made at the register's office, opposing parties appeared, claiming that they held the possessory right to a portion of the lode applied for, under the local laws, and that the applicants for patent were endeavoring to secure from the United States the title to certain mining ground under a new name, which belonged to said contestants by virtue of prior discovery, location, and possession, and asking a suspension of proceedings on said application for patent, in order that the case might be tried in the local courts.

This request was accordingly granted, and an action in ejectment commenced in court by the adverse claimants. When the case was called, however, the plaintiffs declined to prosecute, and allowed the cause to be dismissed at their own cost, for the reason, as they averred, that the action in ejectment would not lie, because they were in the quiet and peaceable possession and occupancy of the lode, which they claimed, but desired that this office would grant them another 'stay of proceedings, in order that they might try the case in court a second time.

This the Commissioner declined to do, holding that as the adverse claimants had once enjoyed the privileges accorded them under the mining statute, and had their day in court, they could not be allowed a second stay of proceedings by reason of their having failed to properly

prosecute their cause in the first instance, and that the case must now proceed upon the pending application for patent, it being further held that the adverse parties did not satisfactorily show that they labored under any disability to prosecute by being in the quiet and peaceable possession and occupancy of the property, for the reason that there is no satisfactory evidence that the lodes in controversy are one and the same, and even if they are identical, there is sufficient evidence that the applicants for patent occupy, and have occupied, a portion of it, have made a location on it under the local mining laws and customs, sunk shafts and performed other work upon it, and if these acts of ownership and possession did not lay a foundation for an action of ejectment, it is difficult to tell what would.

Even if an ejectment had been impracticable, which it was not, there could have been no difficulty in proceeding in equity, either by a bill to quiet title, or an injunction to restrain the applicants from receiving a patent from the United States, or, in the event of their obtaining one, constituting them trustees of the same for the benefit of the rightful owners of the claim or possessory right thereto, under the local laws, inasmuch as the mining act requires the patent to be issued to parties having previously occupied their claims in accordance with the local customs or rules of miners in the respective mining districts. The pretense of want of power to prosecute is therefore gratuitous, and to send the case into the courts a second time would be, under the circumstances, trifling with the mining act.

ARE MILL SITES PATENTABLE?

The question having been presented as to whether mill sites are patentable under the mining act, this office ruled as follows:

Section 9 of the mining law provides that the owners of water rights shall be maintained and protected in the same, whenever they are recognized and acknowledged by the local customs, laws, and decisions of courts, but makes no provisions for issuing patents for them. The act, however, enables claimants of mineral veins to include in their diagrams and obtain patents for such reasonable quantity of surface ground as may become necessary for the convenient working of the mines, as fixed by the local custom or rules.

Consequently, when a mill site is used in connection with a mine and has reduction works erected, it is ruled that a fair and liberal construction of the mining act will authorize us to treat such mill site as a part of the mining claim, provided it is so held under the local custom or laws, and to include it in the patent with the vein or lode; but it is evident that in no other manner than as a part of a mining claim does the act of July 26, 1866, authorize the issuing of patents for mill sites. When a mill site is used for the convenient working of a mine for which an application for patent is made, actual contiguity between such mill site and mine is not deemed absolutely essential, and if the mill site is held and possessed by such applicant for patent, agreeably to local customs or laws, it may be included in the patent for their lode, even though some distance may intervene between such mill site and lode claims.

DITCHES AND CANALS UPON THE PUBLIC LANDS—EFFECT OF THE NINTH SECTION OF THE MINING ACT.

The Commissioner having been called on for a construction of the ninth section of the mining act, as to whether the rights of ditch or

canal owners on the public lands were protected thereby, the following was communicated:

The mining statute of Congress is the result of a policy which seeks to harmonize the rights of sovereignty of the soil inherent in the General Government with certain possessory rights growing out of the peculiar condition of things found in the mining States and Territories of the West, which had become engrafted upon the public lands through the operation of local customs and legislative enactments.

Its object is to furnish a method of dealing with these conflicting interests so as not to impair the validity of either. It recognizes and preserves such possessory claims as are valid and effective under local regulations, but it does not create them. It substantially embodies as a stipulation, that the General Government, in disposing of the public domain, will proceed in such a manner as to protect such rights of possession to the same as claimants may be entitled to under such local customs or laws at the time of the sale by the United States. But these rights derive all their vitality from local regulations. The act of Congress imparts none. It respects those existing at the date of the sale of the public lands, but superadds nothing to their efficiency under the local laws. Take away the regulations adopted by miners' meetings or local legislatures, and all rights acquired under them in respect to lands remaining unsold must fail.

If, therefore, the inquiry propounded is to ascertain to what extent the ninth section of the mining act protects property in water rights or in a mining ditch or canal, the answer is that in disposing of the public lands upon which such canal is located, the United States will, under the said ninth section, maintain and protect such rights in the same as have vested and accrued by priority of possession, and which at the time of such disposal are recognized by the local customs, laws, and the decisions of the courts of the State or Territory in which they exist.

PROOF OF COMPLIANCE WITH THE LOCAL CUSTOM OR LAWS ESSENTIAL.

An application for patent was received at this office for an ancient copper mine in New Mexico, the applicants claiming to hold the possessory rights thereto by virtue of a relocation made according to the laws of the Territory.

Upon examining the papers received, together with the additional proofs called for, it was found necessary to reject the application, the reasons for which action, as communicated to the local officers, being in effect as follows:

The second section of the act of July 26, 1866, provides "that whenever any person or association of persons claim a vein or lode of quartz or other rock in place, bearing gold, silver, cinnabar, or copper, having previously occupied and improved the same, according to the local custom or rules of miners in the district where the same is situated, and having expended in actual labor and improvements thereon an amount of not less than \$1,000, and in regard to whose possession there is no controversy or opposing claim," a patent may be issued on such claim.

Here we discover that one of the requisite qualifications of an applicant for a mining patent is, that he has previously occupied and improved the claim for which he asks a patent, according to the mining regulations of the district in which it is situated. In New Mexico the territorial act of January 18, 1865, prescribes the mining regulations

for the whole Territory, and consequently an applicant for a patent for a mining claim in New Mexico, under the act of Congress approved July 26, 1866, is required to show that he has previously occupied and improved the claim according to the provisions of said territorial law of January 18, 1865.

Let us now examine said territorial act, and see what is necessary to be done by a party intending to occupy and improve a mining claim in New Mexico. We at once discover that a distinction is made in the act between mines and mineral grounds heretofore occupied in that Territory, and mines and mineral grounds *not* heretofore occupied; that the last mentioned, being newly discovered claims, may be located by erecting monuments or sinking pits at the beginning and termination of each claim, and, within thirty days after such location is made, file for record in the office of the clerk of the probate court of the county in which the claim is situated, a certificate of such location, in which shall be described, with reasonable certainty, the location, the bearing of the vein or deposit, and a full description of the landmarks, &c., which certificate shall be signed by the claimant, and acknowledged before a justice of the peace of the county and precinct where the claim is situated, who shall certify to the same, unless the claim belongs to some other person, and, within twelve months after the location, sink a shaft upon the claim not less than twenty feet in depth. Proof of this it is required shall be made to the satisfaction of the judge of probate of the county in which the claim lies, who shall certify to the same in writing, which certificate may be filed with the clerk of the probate court, who shall record the same, and such certificate, or a copy of the record of the same, duly authenticated by the clerk, shall be *prima facie* proof of compliance with the provisions of said act. If the claim under consideration is subject to location at all by these applicants for patent, these certificates, or an authenticated copy of the record of the same, should be presented to the local officers as evidence that the applicants come within the provisions of the congressional enactment, that they have previously occupied and improved their claims according to the mining laws of New Mexico.

In the case presented the applicants are not endeavoring to obtain a patent for a newly discovered mine, but for an old one that had been worked, perhaps, for a century, and which has been referred to by several writers on New Mexico, on account of the richness of its ores. It is, therefore, the kind of property which, in the seventh section of the territorial mining act aforesaid, is classed as "mines and mineral grounds heretofore occupied in this Territory," and is subject to relocation only after mining has ceased to be prosecuted regularly for a period of ten years or more; and not even in that case, if the fee-simple title to the land has ever been granted by competent authority to those claiming the same, or if the claimant has remained in actual and unquestionable possession and occupation. Hence, when an application is made for a patent for a relocated mine in New Mexico, the applicants, in addition to what is required in the case of new mines, must show by *prima facie* evidence that it is subject to such relocation; or, in other words, that it is one upon which mining has not been prosecuted regularly for ten years or more; that no record evidence of a title by competent authority is found in the locality where such record should be kept, and that no *bona fide* claimant has been in actual and unquestionable possession within ten years preceding the application. In this case the applicants for patent have entirely failed to prove that the claim has been abandoned, either voluntarily or involuntarily, for a period of ten years or more.

The evidence before this office does show, however, that the mine was worked by certain parties up to the year 1862, about which time they were forced to leave the claim and their improvements, by reason of the hostility of the Indians. As this claim is, therefore, not subject to relocation under the laws of New Mexico, the applicants cannot occupy and improve it according to the territorial enactment aforesaid; and if they are unable to place themselves in that position, the General Land Office has no authority of law for issuing a patent on their application.

RIGHT OF THE STATE OF NEVADA TO SCHOOL SECTIONS 16 AND 36,
WHEN VALUABLE AS MINERAL LANDS.

The authorities of the State of Nevada having proposed to dispose of a certain section as school land, which was known to be valuable for minerals, the local administration presented the case for the action of this office. The question was subsequently submitted to the Secretary of the Interior, who decided in the premises to the following effect:

The seventh section of the enabling act of 21st March 1864, passed at the first session of the thirty-eighth Congress, grants to said State said sections, unless sold or otherwise disposed of by any act of Congress. Joint resolution of 30th January 1865, (13 U. S. Stat., p. 567,) declares "that no act passed at the first session of the thirty-eighth Congress, granting lands to States or corporations, to aid in the construction of roads, or for other purposes, or to extend the time of grants heretofore made, shall be so construed as to embrace mineral lands, which in all cases shall be, and are, reserved exclusively to the United States, unless otherwise specially provided in the act or acts making the grant." This joint resolution prescribes a rule of construction which, applied to the act, would exclude from its operation mineral lands, such lands being reserved exclusively to the United States, unless otherwise specially provided for in the act making the grant.

In view of this legislation it seems to be clear that an executive officer must regard a section of land, No. 16 or 36, situate in Nevada, and "rich in minerals," as the property of the United States, and not as passing to the State under the act, and should deal with it accordingly.

Agreeably to this ruling the Commissioner instructed the register and receiver to inform the proper State authorities of Nevada that they would be allowed to select other lands as indemnity, when school sections 16 and 36 are found to be of mineral character.

CONFLICT OF TOWN LOTS WITH MINING CLAIMS.

In a case where the district land officers sent up the application of a mining claimant for patent, accompanied by protest from the owner of certain town lots having buildings and improvements thereon, against the issuing of such patent, for the reason that the same would include such town property, which the protesting party had occupied with his family in quiet and peaceable possession in pursuance of local customs continuously since 1865, the Commissioner instructed the local officers that, although a claim to town lots does not constitute such an adverse interest as contemplated in the sixth section of the mining act, and is not the subject of adjustment in the local courts, still, if the Commissioner has reason to believe that such town property owner has rights under local customs and laws equitably entitled to protection, and that hardship and injustice would result from including such improvements in the grant of the mine, he will, in issuing the patent for the lode claim,

except and exclude from the grant such town-property rights on the surface; that the equities of the mining claimant consist in the circumstance of having invested his capital in improvements upon the public lands with the tacit consent of the Government, and that the occupant of town property stands in precisely the same position; that the act of July 26, 1866, grants to the mining claimant the right to apply for patent on his claim to the extent that he has acquired a possessory title under the local laws and customs; but where such laws and customs at the same time grant the right to locate town property, the possessory title of the mining claimant would be subject to the surface rights of the town claimant, unless the claim of the former was prior to that of the latter in point of time, and the town improvements were not subsequently made with the consent or acquiescence of the claimant of the mine; that where the town claim was located first in a district, State, or Territory by its local customs or statutes authorizing such location, a lode claim would be subject to it, and the claimant of the lode could not acquire by the local law such possessory title as would include such town property; and not having such possessory title to it under the local laws, he has no right to a patent including the same. The like result would follow where the mining claim was located first, and the town improvements were subsequently made with the consent of the mining claimant. In such case the latter would surrender his claim under the local laws to the extent of the surface rights acquired by the town claimant; and having once voluntarily surrendered so much of his claim, he would have no right to include it in his application for patent. But if the possessory title to the mine or lode was first acquired, and the town improvements were subsequently erected without the knowledge or against the remonstrance of the mining claimant, it is but just that his previously acquired rights should suffer no prejudice from such acts, and that he should receive a patent without restrictions as to surface interests, which would be the case, unless the local laws are of such character as necessarily to render his possessory title to the mine subject to the possessory title of the town claimant. Full instructions in relation to the survey and entry of lode and placer claims will be found in the accompanying appendix.

EXTENSION OF CANALS, RAILWAYS, AND WAGON ROADS.

A remarkable feature of American society is found in the reduction to a minimum of the powers of government. Great interests, which in Europe can be prosecuted only by general authority, are here prosecuted by voluntary associations, incorporated and authorized by law. In Europe the paternal or patriarchal theory of society is still, to a great extent, maintained. This idea regards the mass of mankind as still in leading-strings, and deprives the human mind of that development which it acquires by acting under a personal sense of responsibility.

One of the first duties devolving upon society is to increase the power of association and of combination between individuals, by multiplying the practical relations between them. One great means of accomplishing this result is the opening of new methods of intercommunication between different parts of the country. In a former period of our history a grave controversy existed as to the power of the General Government to engage in internal improvements. It is at best but an implied power, and its exercise provoked opposition fatal to such enterprises. Even State authority, though not liable to the same constitutional objections, was found to work imperfectly in accomplishing such works.

Several of the States entered upon extensive systems of public improvements, only to be embarrassed with enormous debts, without obtaining corresponding benefit. The lack of practical intelligence in managing these enterprises, and the gross waste of resources under the plan of constructing them by direct State authority, had become serious, and threatened to paralyze the entire system of internal improvements. In this crisis a remedy was devised by confiding the execution of these enterprises to corporations of private capitalists. Thus were created agencies of a limited range of activity, but with capacity to fill a minor sphere to better advantage than could be expected from a cumbrous governmental organism suited only to general purposes. By bringing to bear motives of private economy, the enormous waste of public enterprises was absorbed. Furthermore, the microscopic eye of a small corporation is far better fitted to observe details than is that of the Government. Appreciating such considerations, the General Government of the United States, in constructing public improvements, so far from seeking to invade the minor details of local jurisdiction, has ever devolved functions of this character upon the States, or upon corporations created by the States. In the case of the construction of the Pacific railways, however, across the unorganized Territories of the Rocky Mountain region, it was found necessary, in the absence of all local legislative authority, to create corporations, and to endow them with powers sufficient to enable them to carry out these enterprises. We have thus adapted the agencies to the work to be performed, and it is evident that its requirements have been met with far greater accuracy and success.

In the American railway system we find an illustration of the spontaneous self-organizing power of our people. The enormous extent to which these corporations have expanded has already awakened apprehension as to the power of their ultimate control. In fact, the authority and franchises conferred upon this class of capital have become a formidable element of our social system. This evil, however, if it be such, will probably work its own cure. Though imposing in its aggregate influence, it still bears a small proportion, probably one-fifteenth, to the aggregate capital of the nation. In our free civilization, at the proper time, the means will doubtless be found of controlling this enormous interest, and of restraining any aggressions should such ever be attempted upon other interests of the people.

English railroad incorporation, which served as the model of our own, allows the same freedom of corporate action, restrained, however, by great social interests to narrower practical limits than in this country. Continental Europe seems to have regarded these corporations with suspicion, confining the range and extent of their franchises within much narrower limits than either in England or America. France, in the organization of her railway system, has preserved the vicious centralization of her political organism. Coöperation of private interests is admitted to only a limited extent. Franchises to railway corporations are restricted to ninety-nine years, during which time the law presumes that private capital has had ample opportunity to remunerate itself with principal and interest for all its outlay. The roads then become the property of the government. The other continental nations generally have incorporated similar restrictions into their railroad systems.

The history of our railroad corporations already presents a worthy field for authorship, and has elicited some partial attempts in this direction. Questions in social science and in jurisprudence have been opened up in great numbers and of profound interest. Grave modifications of our social order have been introduced, from which ultra conser-

vative minds deduce disastrous consequences, but auguries of this character have greeted every forward movement of civilization, and have failed seriously to alarm mankind. Grave difficulties, it is admitted, have arisen from the imperfect coördination of these new and powerful interests with the vested rights already subsisting. But experience has shown that evils of this character are closely associated with their appropriate correctives, and that the ultimate, aims, and results of progress will be favorable to the best interests of man, both individually and socially.

Railways in this country have a political and social importance which they can attain nowhere else. They have proved to be the bond of an indissoluble union of the States. The question of permanent union of the eastern and western slopes of the Alleghanies lay with deep anxiety upon the mind of Washington. Prior to the Revolutionary War he had made careful reconnoissance of the country intervening between the Ohio River and the James and Potomac Rivers, with reference to a practicable communication between them. In 1783, after the close of the war, he followed the course of the Mohawk River to its head, detecting the only subsidence in the Appalachian Mountain system through which a canal communication between the Atlantic and our great northern lakes has yet been secured. He subsequently made another examination of the Alleghany region, and presented the results of his observations in a memorial to the governor of Virginia, a paper remarkable for thorough comprehension of the situation of affairs, and for sagacity and ability unsurpassed by any of his productions. In that paper the illustrious patriot says :

“I need not remark to you that the flanks and rear of the United States are possessed by other powers, and formidable ones, too; and how necessary it is to apply the cement of interest to bind all parts of the Union together by indissoluble bonds, especially that part of it which lies immediately west of us, with the Middle States. For what ties, let me ask, should we have upon these people in the Mississippi Valley? How entirely unconnected with them shall we be, and what troubles may we not apprehend, if the Spaniards on their right, and Great Britain on their left, instead of throwing stumbling blocks in their way, as they now do, should hold out lures for their trade and alliance? What, when they gain strength, which will be sooner than most people conceive—from the emigration of foreigners who will have no predilection for us, as well as the removal of our own citizens—will be the consequence of having formed close connections with both or either of these powers, in a commercial way? It needs not, in my opinion, the gift of prophecy to foretell.

The Western States (I speak now from my own observations) hang upon a pivot. The touch of a feather would turn them any way. They have looked down the Mississippi till the Spaniards, very impolitically, I think, for themselves, threw difficulties in the way; and they looked that way for no other reason than because they could glide gently down the stream, without considering, perhaps, the difficulties of the passage back again, and the time necessary to perform it; and because they had no other means of coming to us but by land transportation and unimproved roads. These causes have hitherto checked the industry of the present settlers, for, except the provisions, occasioned by the increase of population, and the little flour which the necessities of the Spaniards compel them to buy, they have no incitements to labor. But smooth the road and make easy the way for them, and then see what an influx of articles will be poured upon us, how amazingly our exports will increase, and how amply we shall be compensated for any trouble and expense we may encounter to effect it.

Thus the Father of American Freedom, not satisfied with having pledged upon the battle-field life, fortune, and sacred honor to the cause of independence, devotes his great mind at his first leisure, to the problems of peaceful civilization. The danger which so profoundly moved his patriotic feelings has since passed away. The Spanish flag no longer waves over any portion of the North American Continent, and the British colonial empire, then so threatening upon our northern borders, is rapidly gravitating toward the American Union. Our area has expanded westward to the Pacific Ocean and southward to the

Rio Grande. A homogeneous population, drawn from the best blood of Caucasian Europe, is spreading rapidly over the wilderness, constituting the greatest civilization the sun ever shone upon. While European military establishments embrace five and a half millions of men in time of peace, and levies *en masse* in time of war, to decide the selfish issues of dynastic ambition, we find an army of thirty thousand men sufficient, not only to protect our frontiers but to enforce the authority of the Union even amid the smoldering fires and bitter remembrances of a recent gigantic rebellion.

How much are we indebted for our present security to the patriotic cares of Washington and his contemporaries, who detected and grappled with the earlier obstacles to our National Union! They indicated the nature and difficulties of the task of coördinating the communities separated by the Alleghany Mountains into a single community, and stimulated that systematic effort which culminated, finally, in practically leveling this mountain barrier by means of railways and canals. Maryland and Virginia made the movement toward connecting the waters of the Mississippi with the Atlantic, by chartering a company for the construction of a water line along the Potomac, making liberal grants of money in aid of this enterprise. Washington was elected president of this company, but his assumption of the responsibilities of the office of President of the United States, in 1789, absorbed his entire attention, and the plan which he had suggested and personally urged was, for the time being, abandoned. It was subsequently, however, carried out in the construction of the Chesapeake and Ohio Canal.

The facilities offered by the Mohawk Valley for the construction of a water line across the Alleghany Mountain system, as tested by Washington in his reconnoissance in 1783, induced the formation, in 1792, of an association for this purpose, entitled "The Western Inland Lock Navigation Company." This organization, in 1797, completed a canal around the Little Falls of the Mohawk, $2\frac{3}{4}$ miles in length, and two or three other short canals around the more formidable obstructions to the navigation of this river, at an entire outlay of \$400,000, securing the passage of boats of fifteen tons burden. This slack-water system, through imperfect construction, was found entirely unsuited to the pressing wants of the public, and was sold to the State of New York for a sum less than the original cost.

After the war of 1812, and in 1817, the State legislature made provision for canal construction. The work on the Erie Canal was commenced on the 4th of July of the last-named year, and completed November 8, 1825, connecting the waters of Lake Erie with the tributary waters of the Atlantic Ocean. The opening of this canal was accompanied by a sudden and enormous reduction in the cost of transporting western produce to market. Previous to this time the cost of transportation had been \$100 a ton from Buffalo to New York, being about four times the market price of corn, twice the price of wheat, and almost equal to that of beef and pork. On the opening of this canal the cost of transportation was at once reduced to \$10 per ton, and subsequently to \$3 per ton. The effect of this reduction was immediately felt in stimulating production along the line of the canal, and in concentrating at New York a large amount of trade that had hitherto been directed to Philadelphia and Baltimore by being floated in arks and rafts down the Delaware and Susquehanna Rivers. The New York and Erie Canal, however, is the only successful effort to establish a water communication between the eastern and western slopes of the Alleghany Mountains. Both these sections of our country have established local lines of an aggregate of nearly 5,000 miles,

resulting in very great advantage to their respective interests. But neither Maryland nor Pennsylvania were able to tap the Mississippi basin with a water line. The importance of this measure had begun, in 1824, to be seriously contemplated as a matter of commercial advantage. The magnificent resources of the Mississippi Valley had attracted the attention of business men in the Atlantic States as promising an immense volume of trade, provided an eligible method of transport and travel over the mountains could be devised. A keen and powerful competition for the control of this trade was immediately aroused among the great commercial cities of the Atlantic slope. New York and Boston were the sole beneficiaries of the only canal line that had been established, and thitherward southern capital and enterprise had already begun to migrate.

The success of railway construction, then just becoming assured in England, suggested a new method of overcoming the difficulty. The railroad in this country, as in England, had first been employed for merely local purposes; it was destined to supersede all other public communications. Baltimore, being nearest to the Great West of all the commercial cities of the Atlantic slope, first undertook to scale the mountain barrier by the construction of a single line of railway to the Ohio River. This enterprise, commenced in 1828, required a quarter century for completion. Meanwhile, Pennsylvania and New York, equally alive to the importance of securing the trade of the Great West, succeeded in consolidating into single companies several detached lines of railway that had been constructed for local purposes. These lines are now known as the New York Central and Pennsylvania Central Roads, connecting with the Atlantic sea-board Lake Erie and the Ohio Valley, respectively. To these, New York added another through line from New York City to Dunkirk, on Lake Erie. Virginia and North Carolina have also completed railway lines across the mountains, while South Carolina and Georgia have passed it on its southern flank, reaching out into the vast cotton region of the Gulf States. While the railway system was thus being pushed westward to establish lines of communication between the Atlantic slope and the Mississippi basin, thus overcoming the isolating influence of the mountain range and fusing the two sections into a single homogeneous community, it was spreading a local network of lines all over the older States. Massachusetts now has one mile of road to each 5.27 square miles of territory; the proportion of Connecticut is 6.75; of New Jersey, 8.22; of Pennsylvania, 9.39; of Delaware, 10.10; of Rhode Island, 10.45; and of New York, 12.89. The proportion of New England is 15.12 square miles to every mile of railroad; of the Middle States in this calculation it should be observed that large portions of New York and Pennsylvania, and nearly the entire area of Western Virginia, should be credited to the Mississippi basin, and portions of Middle States east of the mountains enjoy the greater portion of the railroad mileage, making the ratio of that section greater than any other of the Atlantic slope. In the Southern States the proportion of railway mileage has been much less, South Carolina averaging but 26.71; Virginia, 27.59; Georgia, 35.11; North Carolina, 44.87; and in Florida, 132.69 square miles to each mile of railway. In spite of the immense disparity in the more southern Atlantic States, especially in Florida, the general average ratio of the Atlantic slope is less than 25 square miles of area to each mile of completed road. When the whole of this portion of our country shall have attained the ratio of Massachusetts, the aggregate will equal the present aggregate of the whole country, or about 50,000 miles. The main communications between the East and

the West, across the Alleghany Mountains, by means of railways having been established, the development of the resources of the Mississippi Valley became rapid and regular. One of the more striking indications of this fact is found in the rapidly increasing demand for local roads, and for the extension of through lines over the entire section. The wealth of the older States had enabled them to supplement their main lines with a network of local routes covering large portions of the Atlantic slope, and bringing the whole within easy communication. In the younger States this work was greatly restricted by want of capital. But a new phase of railroad enterprise was now to be presented. Instead of awaiting the necessary accumulation of means of construction, by the slow processes of old time industry, it found means of hypothecating its future prospects, and of realizing therefrom tangible means of present operations. The railway became in this way the creator of values. It was enabled to realize this great idea through the medium of the public land system.

The middle of the nineteenth century will be memorable in the history of the world's social system as the era of development of two grand elements of commerce—the California gold deposits and the extension of ocean steam navigation. The former looked to the enlargement of the metallic basis of the world's circulating medium; the latter provided the means of an increased transportation of commodities; both indicated an enormous enhancement of the volume and activity of trade in all parts of the globe. All these innovations have been realized as permanent conditions in the great problem of industry and commerce, of production and exchange.

These new agencies of gold and steam, having thus reorganized the world's productive and trading system, their activity was soon felt in the movement of our domestic trade. The development of resources became still more rapid, both east and west of the Alleghanies; but a new element of the problem was developed in the rapid settlement of the Pacific slope. The first adventurers were drawn thither by temporary motives of mining enterprise, the popular idea of the country being one of very limited productive capacity.

Unexpectedly, however, our Pacific slope has developed agricultural resources of wondrous richness and variety, and of a remarkably unique character.

The climate has assumed a most genial phase, presenting remarkable attractions to permanent residence. A rapid settlement of the country by a civilized population has already brought three new States in that region into the American Union, while several Territorial organizations promise soon to assume the full responsibilities of States.

This extension of our civilization has opened up to railway construction a wider scope, both of local and through lines of travel and transportation, than ever was known. Lying right in the new lines of the world's commerce, and presenting a novel line of communication between the eastern and western spheres of the Old World, our territory presented especial attractions to this new enterprise. But it was found that the demand for railway construction, thus created, was far in advance of the capital available for the work. To meet this necessity, however, the General Government found itself possessed of unexpected resources.

It was endowed by the Constitution with the guardianship and disposal of proprietary right in the national territory. The price of the public lands had long since been fixed by law at \$1 25 per acre, and even at this very low price large portions had remained a drug in the

market, protracting the period of their disposal, and thus enhancing its aggregate expense. At this point it was suggested by a western statesman that railway enterprises through the public domain should be endowed with a certain amount of public land, the price of the alternate sections being doubled in order to save the national revenue. The increased value conferred upon these lands by the presence of the railway was far greater than the increase of price demanded.

This experiment was tried in the case of the Illinois Central Railroad, the even-numbered sections for six miles on each side of the line being granted by act of September 20, 1850, to the State of Illinois in aid of its construction. The aggregate amount of land donated under this act was 2,595,053.60 acres, which, at the minimum price, amounted to \$3,243,750. The double of this sum represented the aid that was supposed to be given thereby to the railway, viz., \$6,487,500. But by retaining the land until the government lands along the line had been sold, the company was enabled to realize much greater prices. The company, on accepting the grant as assignee of the State, agreed to pay, in lieu of all taxes, an annual impost of 7 per cent. upon the gross earnings of the road. Of the lands, 2,000,000 acres were devoted to construction, of which 435,908.24 acres remain undisposed of, in the hands of the company. To pay the interest on the bonds of the road, 250,000 acres were devoted, of which 12,745.90 acres still remain undisposed of. The remainder, 345,000 acres, were not directly devoted to any particular object; of this amount 12,745.90 acres remain at the disposal of the company. Of the total landed endowment there still remain 457,779.17 acres undisposed of. The average rates per acre of the lands already sold are, for construction lands, \$11 35 per acre; for interest lands, \$8 46; and for lands not specifically devoted, \$12 84. The smaller rate of the interest lands may be accounted for from the fact that the earlier sale of these lands was necessitated by the bonded obligations of the company. From sales, including advanced interest, the construction lands have realized \$17,763,001 26, the interest lands \$1,949,886 73, and the unappropriated lands \$4,255,848 79, showing a total realized to the company of \$23,968,736 78. The lands undisposed of now average \$12 55 per acre, at which rates they will swell the actual pecuniary aid derived from the landed endowment to \$30,000,000, which is equal to the entire cost of the road and the equipment, entirely reimbursing the stockholders for their investment, while the profits remain undiminished. This road consists of a main line from Cairo to Dunleith, 560.95 miles, with a branch from Chicago, striking the main line at Centralia, embracing 146.50 miles. The gross earnings of the company for the past year amounted to \$6,739,998, besides \$641,000 upon leased roads in Illinois, and \$1,442,484 on leased roads in Iowa; total, \$8,823,482. The total expense of operating the main line and its leased lines, \$4,924,594. The total net earnings over operating expenses amount to \$3,898,888, from which, deducting charter-tax to Illinois and Iowa, and rent of leased roads, leaves \$2,887,376 as the amount subject to distribution among the stockholders.

At the time these lands were granted to Illinois the public debt of that State amounted to \$14,000,000. It is now less than half that amount, the reduction having been mainly effected by the application of the railroad tax to the redemption of State bonds. When that indebtedness shall have been canceled it is estimated that scarce any necessity will remain for the levy of taxes for State purposes, the railroad tax proving probably sufficient to meet the expenses of all departments of the general administration. The above figures, however,

indicate but a very small portion of the important influence exercised upon the State of Illinois, and upon the country at large, by the construction of this very important public work. During the decade from 1850 to 1860 the increase of population was over 100 per cent., whereas that of the previous decade was but 78 per cent., though calculated on a much smaller principal. The true value of personal and real estate in Illinois, according to the census report of 1860, in ten years had increased from \$156,265,006 to \$904,182,620. The actual increment—\$747,917,614, or 472 per cent.—shows that the production of values and the accumulation of wealth had advanced at a ratio nearly five times greater than the population, and that the resources of the State had been developed to meet higher purposes than those of mere comfortable subsistence. Yet it is evident that even these figures very imperfectly embody the expansion of the prosperity of Illinois.

The grand impulse to this improvement is generally acknowledged to be the construction of the Illinois Central Railroad, which, perhaps, would not yet have been accomplished without the aid of the landed endowment by Government. To estimate the difficulties in the way of this advance in civilization, wealth, and social order we must place ourselves at the standpoint of the middle of the nineteenth century, and then measure the feeble resources of that day with the magnificence of the present. There is reason to believe that this vast movement of commerce and industry has been put forward a quarter of a century by the policy of the Government inaugurated in the landed endowment of the Illinois Central. The beneficial results of this experiment were too patent to escape the observation and emulation of other parts of the country. The act of September 20, 1850, by which this land grant was made to the State of Illinois, assigned the same grants to Mississippi and Alabama for the construction of a road which should connect the Illinois Central road with Mobile in Alabama. Under this act there accrued to the two States last mentioned 1,235,040 acres, of which aggregate 1,156,658 acres had been certified prior to June 30, 1868. The Mobile and Ohio Railway connecting with the Illinois Central at Columbus, Kentucky, by a short interval of river navigation, was constructed under this grant. It embraces 472 miles of main track, with a branch of 14½ miles, and has had a powerful influence in developing the resources of the country through which it passes. Its history, however, is closely associated with the disasters of the late civil war. Though it has not produced the same powerful effect upon the prosperity of the country as the Illinois Central, it has nevertheless aided very materially in developing the resources of the Southern States, and in enabling them to recover from the ravages of war.

It would be interesting, if space would admit, to follow the successive grants of this character and to detail their beneficent influence upon our prosperity, but the subsequent stages of the railway movement in this country must be briefly generalized. Grants in aid of railways have been made by the General Government to Illinois, Mississippi, Alabama, Florida, Louisiana, Arkansas, Missouri, Iowa, Michigan, Wisconsin, Minnesota, Kansas, California, and Oregon, amounting to 59,308,581.40 acres, of which there had been certified and patented up to June 30, 1870, 22,676,225 acres. In these States, at the opening of the present calendar year, there were completed and in operation 15,974 miles of railway, with a fair prospect of the speedy enlargement of this aggregate to 20,000 miles. Estimating the annual transportation of these roads at 2,000 tons per mile, and we have 30,000,000 tons of freight, worth, probably, \$3,000,000,000. The true value of the personal and

real estate of these States will probably amount to three times the above sum, or \$9,000,000,000. The creation of these values is due almost entirely to the landed policy of the Government, rendering the construction of these roads possible in spite of the scarcity of capital at the date of their inauguration.

For the construction of transcontinental roads the General Government has been compelled to rely upon corporations created by itself. These roads, generally termed Pacific, were inaugurated by act of Congress approved July 1, 1862, which provided for the construction of a line of railway and telegraph from San Francisco, in California, to Omaha, in Nebraska, and Wyandotte, in Kansas, on the Missouri, by lines diverging at the 100th meridian. The construction of the western portion of this line was confided to the Central Pacific Railroad Company, incorporated under the laws of California. The southern branch, from the 100th meridian eastward, was awarded to the Leavenworth, Pawnee and Western Railway Company, now called the Kansas Pacific, incorporated by authority of the State of Kansas. For the construction of the Northern Branch to Omaha, however, the General Government was compelled to incorporate the Union Pacific Railroad Company. To each of these companies were granted the odd-numbered sections of unappropriated public lands lying on each side of the line of each road for ten miles, as subsidies to aid in their construction. In addition to these landed endowments, the Government loaned its credit to the amount of \$16,000 per mile, over the less expensive portions of the line, with an increase to \$32,000 and \$48,000 per mile over the more difficult and expensive portions. By special statement of the Treasury Department, dated September 1, 1869, made in answer to a request of this office, it appears that the loan subsidy to these companies was as follows: To the Union Pacific, \$26,638,000; to the Central Pacific, \$24,371,000; and to the Kansas Pacific, \$6,303,000.

These companies did not commence the prosecution of their work of construction until after the passage of the act of July 2, 1864, by which the land endowment was doubled and the companies allowed to issue first mortgage bonds, taking precedence of the Government bonds, which had previously the prior claim upon the roads and their equipments. Under these acts of Congress, and with the assistance of the subsidies therein granted, these companies began the construction of the main transcontinental line across the intervening wilderness, the Central Pacific having previously constructed a portion of its line between San Francisco and Sacramento. The history of this splendid feat of engineering science has been given to the public in a variety of forms. It was completed on the 10th day of May, 1869, when a junction was made of the Central Pacific and Union Pacific Roads at Promontory Point, and the transcontinental line completed.

This line embraces 1,914 miles from Omaha, Nebraska, to San Francisco, California, making connections with New York, which bring the transit of the entire continent to a little more than 3,000 miles. The express card time from Omaha to San Francisco is now within 52 hours, while, by selecting some of the eastern connections, the entire trip from San Francisco to New York may be traveled, on card time, within five days. There is reason to believe that even this limited time will soon be reduced. It will be remembered that one of the points of ridicule leveled at Sir Isaac Newton by Voltaire was the estimate of the former that means of locomotion would be devised whereby it would be possible to move 50 miles per hour. The mere possession of this idea was set down by the French wit as *prima facie* evidence that the mind of

Newton had become clouded. But what is this utmost supposition of Newton to what we see realized to-day? Loaded trains have averaged 50 miles per hour, while men on locomotives have doubled that rate. If we should question the possibility of enhancing the speed of railway trains so as to accomplish this distance between New York and San Francisco in half the present card time, or about sixty hours, we should place ourselves in danger of such ridicule by the next generation as Voltaire's skepticism has incurred in the present age. Indeed, the reduction of the time of transit from ocean to ocean to 50 hours is now talked of by railroad men as of probable realization at no distant period.

The Kansas Pacific Company, having surrendered to the Denver Pacific Company its franchises beyond the limits for which it was entitled to a loan subsidy from the Government, in accordance with the act of March 3, 1869, the last-named company has prosecuted the work of construction with such energy that it was opened from Wyandotte, its eastern terminus, to Cheyenne, for through travel and transportation, on the 1st of September last. The distance between those two points is 736 miles, making 2,134 miles from Wyandotte to San Francisco, by the line of the Union Pacific and Central Pacific Roads, or 220 miles more than the distance from Omaha to San Francisco.

The operations of the Denver Pacific in the way of travel and transportation during the past year have not yet been published. The Kansas Pacific Company reports for the year 1869 the conveyance of 146,583 passengers, being an increase of 37,251 over the report of the previous year and a freight transit of 175,518 tons, being an increase of 51,141 tons over the aggregate of 1868. The gross earnings, \$2,225,850, show a large increase, but this was counterbalanced by the increase of the operating expenses, reducing the net profits somewhat below those of the previous year, leaving but \$839,670 against \$873,669 in 1868. Of the other eastern branches of the Central Pacific Railway system, inaugurated by the act of 1862, the Central Branch has constructed a line of road and telegraph, 100 miles in length, from Atchison, in Kansas, on the Missouri River, to Waterville, in the same State. This is one of the branches contemplated in the original act, and authorized under the impression that this distance would enable it to intercept the extension of the Kansas Pacific, under its original requirement to strike the main line of the Union Pacific at the 100th meridian. The latter, however, having been permitted by special act to extend its line up the valley of the Kansas, the proposed junction of the Central Branch was rendered impossible. Two hundred and fifty miles of road will yet be required to complete this junction, and for this the company is applying for the extension of its landed and loan subsidy. This company has received a loan subsidy of \$1,600,000 from the Government, which constitutes a second mortgage upon the road-bed and equipment. It declined to make any report of its operations of 1869 through the medium of Poor's Railroad Manual. Its authorized capital stock is \$1,000,000, which, with \$3,200,000, the proceeds of its first and second mortgages, makes an aggregate of \$4,200,000, or \$42,000 per mile, available for the construction of its line.

By act of July 23, 1866, a grant of ten alternate, odd-numbered sections on each side of the line was made to the State of Kansas to aid in the construction of a railroad and telegraph from Elwood, in Kansas, on the Missouri River, opposite Saint Joseph, westward through Marysville, to effect a junction with the main line of the Union Pacific road at a point not further west than the 100th meridian, said road to be denominated the Saint Joseph and Denver City Railroad. The road has

been built to Hiawatha, in Kansas, 41.67 miles, and has under construction, and, by this time, probably finished, another section of 69.41 miles, reaching to Marysville. The land grant of this company calls for 1,600,000 acres, with a present cash value of \$4,000,000. It has issued its first mortgage bonds on the entire distance to Marysville, 111 miles, and contemplates a speedy construction of the entire line. Its authorized capital stock is \$10,000,000. It proposes to strike the Union Pacific line at Fort Kearny. The Union Pacific Company has also constructed a branch from Fremont, 47 miles west of Omaha, to Sioux City, Iowa, from which it received a landed and loan subsidy equal to that awarded to the main line. Its loan subsidy amounts to \$1,628,000. This road runs down the east bank of the Missouri to a point of junction with the Chicago and Northwestern Railroad, and then crosses the river to Fremont at a sharp angle, giving a more direct route from Chicago to San Francisco than the line through Omaha. At the west end of the main Central Pacific Railway system is a branch entitled the Placerville and Sacramento Valley Railroad. It had, at the close of 1869, 26 miles completed from Folsom to Shingle Spring, with 13 miles yet to construct. It was endowed with 20 odd sections per mile, under the act of June 13, 1868. By the same act the same landed subsidy was granted in aid of the California and Oregon Railroad, from the north line of California to a point on the Central Pacific Road, to be selected by the company. That point has since been fixed at Roseville, 18 miles from Sacramento. It has been constructed northward 79 miles, and when completed will have a length of 313 miles. By the same act a similar grant was made to the State of Oregon to aid in the construction of a route continuing the line last mentioned to Portland, in that State. A company for the construction of this line has been incorporated by the Oregon legislature, and has constructed 20 miles of road, which has been accepted by the Government under the provisions of said act. The foregoing is a brief synopsis of the great Central Pacific Railway system and its branches, inaugurated under the act of 1862, and acts amendatory. The landed subdivisions accruing under the grants for the construction of these roads and branches amount to 35,000,000 acres, with a cash value at present of probably \$100,000,000. Besides this, loan subsidies amounting to \$60,860,320, of which the Central Pacific received \$24,371,000; the Union Pacific, \$26,638,000; the Kansas Pacific, \$6,303,000; the Central Branch, \$1,600,000; the Sioux City Branch, \$1,628,320, and the Western Pacific, \$320,000. These imperial subventions find no parallel in history, for no government has ever yet had command of material resources at all comparable with that which has been exercised by our General Government in the endowment of educational institutions and means of intercommunication; no fund at all comparable to our public land system has ever been placed at the control of any government. It is a social phenomenon in history, the general influences of which have already been partially developed, but its wonderful capacities for both good and evil are not yet unfolded.

The immediate advantages of the completion of the initial line of transcontinental railroad, with its dependent branches, are beyond our present computation. The reports of the Union Pacific Company, accessible in the preparation of this report, were somewhat meager, yet it was ascertained that the gross earnings of the first year, closing with April 1870, amounted to \$8,407,852 78, and that the operating expenses were about 50 per cent. of this amount. The remarkably low cost of maintaining this line is attributed to the rainless climate exercising a much less destructive influence upon its materials of construction, and

the entire absence of destructive freshets. Coal and other materials for producing motive-power are abundant and well distributed along the line. The cost of the road and equipments thus far amounts to \$106,245,978 48. The Central Pacific reports gross earnings amounting to \$5,670,822 25, the operating expenses being \$2,993,523 19, or 52.79 per cent. The total cost of the road and equipment is \$97,094,922. The trains run during the past year passed over 2,868,227 miles, of which 679,013 were by passenger trains, 1,677,346 by freight trains, and 472,375 by service trains. The passengers carried westward were 142,293; eastward, 141,679; through, 29,100; local, 254,872—total, 283,972; of through freight, 2,169 tons were carried westward and 3,018 eastward; making a total of 5,187. The local freight traffic embraced a transportation westward of 101,706, and eastward, 170,431—total local traffic, 272,137; grand total of through and local traffic, 277,324 tons.

Equalizing the combined route of the Union Pacific and Central Pacific upon the ratio of mileage presented by the last-named returns, and we have for the 1,904 miles between San Francisco and Omaha, a capital actually invested, as shown by the united cost of the two roads, with their equipments, of \$203,340,900. The gross earnings have amounted to \$14,078,675; about half of which amount, or \$7,000,000, is net profit, about 3½ per cent. upon the capital actually invested. Inasmuch as the landed subsidies of the Government will cover at least half the cost of the roads and equipments, and inasmuch as a large portion of the gross earnings of the roads have been largely absorbed in canceling the interest, and in being reserved for the payment of the principal of the Government mortgage bonds, the real income of the capitalists will be much greater than this. In fact, it will be an intricate financial problem to determine what the actual contribution of the shareholders will be. The gradual cancellation of both first and second mortgage bonds and the rise of the land grants in market value present too many points of variation to be embraced in any present computation.

If the business of the Union Pacific Road is in the same proportion to mileage as the Central Pacific, the trains run over the whole line passed over 6,283,200 miles, of which about 1,520,000 miles should be credited to passenger trains, 3,800,000 to freight trains, and the balance to construction trains. The number of passengers transported was about 620,704, divided in nearly equal proportion between east and west bound passengers, about one-ninth being through passengers, and the remainder local passengers. The freight transported, the eastward, bound preponderating in the ratio of 17 to 10, amounted to 609,000 tons, of which about two per cent. was through freight.

It will be seen from the above figures that but a small proportion of the profits of this transcontinental line of road depends upon its through traffic. It is now clear that a railroad could scarcely be built, with any degree of judgment, in the public domain, that will not pay a fair interest on its investment from local traffic alone. If the first year's operations on the first through line to the Pacific show such satisfactory financial results, we have reason to believe that railway enterprise has now received that development of vital power which will enable it to prosecute its great mission of civilization without further aid from Government, either by loan or landed subsidy. The uneasiness of the public mind in regard to the immense donations of public land may be well founded, not merely, however, upon the money value of the grants themselves, for this is indemnified to the Government in the doubling of the price of the reserve or double minimum lands; the rapid sale of the adjacent portions of the public domain secured by these improvements by facilitating the

discharge of the public trust in the disposal of these lands must also be taken into the account. The danger, however, lies in the enormous landed monopolies created by these grants and the long time they may probably be held out of the market in order to realize higher prices. Thus they might give rise to speculations in real estate and paralyze for the time being the productive capacity of immense regions of country. The policy of future landed subsidies as a general thing may, therefore, well be questioned. It were far more to the public interest, if aid of this kind be really required as a national necessity, that it be granted in the form of loan subsidies. It was to be expected, however, that, in this opening chapter of our railroad development, erroneous views of necessity would be entertained and that serious evils would inevitably result from our ignorance of the true conditions of the problems to be solved. These, however, are by no means appalling. The vital force of free civilization is ample to control any evils yet developed by our wonderful progress. The withdrawal of Government aid will throw the financial public back upon its ulterior resources. Railway building will lose its character as a mere speculation and settle down to a calm and close calculation of resources and actual expenses, engineering science will be prompted to achieve still higher triumphs over the obstacles of nature, and the art of road building and equipment settled upon legitimate principles. The experience of the past five years has shown the necessity of a multiplication of through lines across the continent. We have seen that the local traffic of the line already completed is amply sufficient for its support, and that this, with the growth of the country, will still further expand. The multiplication of these lines at proper distances is found not at all to interfere with their material prosperity. The Pennsylvania Central Railroad, though directly connected with only a portion of the Ohio Valley, and though competing with four powerful rival lines of transportation, the New York and Erie Canal, the New York Central and Erie Roads, and the Baltimore and Ohio, has found it necessary not only to double but also to triple its track and rolling stock. To meet the demands of our rising settlements in the West we will find it necessary to enlarge our railway accommodations over the public domain west of the Mississippi. The single line now subsisting might become a mere monopoly, if no competition be aroused to dispute its sway. The power which Congress has reserved, of regulating the charges and of protecting the public against imposition, is one very delicate in its nature and difficult of execution. It is not easy for the legislative power, with its general processes, to interfere with recognized interests without producing some other derangement. If the end in view can be otherwise secured it will be infinitely better. The establishment of competitive lines of route will obviate all necessity for such an interference and secure the points desired without any sacrifices of admitted interests.

The necessity of further lines of through traffic is also sufficiently evident from the fact that the present existing line is a compromise. Its location was not secured solely by considerations of the greatest advantage to the enterprise itself, but to a considerable extent by conflicting interests of rival sections which were to be benefited by its construction. On this central line it was found impossible to pass the Rocky or the Sierra Nevada Mountains at an altitude less than 8,262 feet in the former and 7,042 feet in the latter. These lofty elevations during the winter expose the workings of this line to very serious interruptions. Both north and south of this line are found localities in which this passage may be made over three natural ravines at far less cost of

capital and labor. The Northern Pacific Railroad claims especial advantages as a through route across our continent. Its low summit levels present comparatively small engineering difficulties. It proposes to cross the Cascade Mountains in Washington Territory; the northward extension of the Sierra Nevada at the Snoqualmie Pass, 3,000 feet above sea-level; and the Rocky Mountains at Cadotte's Pass, the altitude of which, 6,167 feet, may be reduced to 5,337 feet by a tunnel, in length 2½ miles. The points on the map at which the Northern Pacific and Union Pacific lines cross the Rocky Mountains, as shown by Blodgett's isothermal charts, are on the same winter isothermal line of 20° F. The winter temperature of the adjacent plains is very nearly the same, while the height of Evans's Pass is at least 3,000 feet greater than Cadotte's Pass.

This route claims to be the shortest and most central between the navigable tributaries of the Atlantic and Pacific Oceans. Its main line, from Lake Superior to Puget Sound, is 1,775 miles in length, being 70 miles shorter than the Union Pacific, and reaching 200 miles further eastward. It claims also a shorter distance from its western terminus, at Seattle, to Japan, China, and Russian America, than San Francisco, the difference in its favor being 500 miles. It further claims a more eligible country through which to pass, avoiding the snowy obstructions on the one hand, and the alkali regions on the other. It passes through a region of excellent agricultural and mineral resources, abounding in materials for cheap and effective construction. It is even proposed to manufacture the iron rails for its track from its splendid deposits of iron ore and coal. The estimated cost of construction and equipment of the main line is \$140,377,500, to which adding \$16,480,000 for the construction of the Oregon Branch to Portland, and we have, for the entire estimated cost of the road and its equipments, \$156,857,500.

The Northern Pacific Company was incorporated by the act of July 2, 1864, with a landed endowment of 25,000 acres per mile, amounting to 47,000,000, according to the best estimates that can be made in the absence of surveys along the entire line. By joint resolution of May 31, 1870, this aggregate was enlarged by an estimated addition of 11,000,000 acres, making 58,000,000 acres, as probably accruing under the grant. What the actual present money value of this grant really is, it would now be very difficult to estimate. It will advance in value, however, with each year of advancing settlement and civilization in those regions. No report of actual operations under the grant, beyond the preliminary survey of the route, has been accessible in the preparation of this report. This route promises to establish very important eastern connections. For freight to Europe without transshipment it brings together the produce of a large territory west of the head of Lake Superior. Its railway connections will be not less important. A grand scheme of a continuous railway line from Portland, Oregon, to Portland, in Maine, and thence to Halifax, has been devised by far-seeing capitalists, which only needs the completion of the Northern Pacific Road fully to establish. The local traffic on this road promises to be immensely valuable. The adjacent country is capable of almost continuous agricultural settlement, while the rich mineral deposits and admirable facilities for manufacturing enterprise, so profusely distributed, will give scope to a varied industry and a symmetrical civilization. The undeveloped resources of this part of the country have already attracted a large immigration in anticipation of the speedy completion of this road, while labor and capital find it an inviting field. Governor Stevens was of opinion that not more than one-fifth of the land between Red River and Puget Sound

was absolutely inarable, and that this portion was covered with heavy timber. The great wheat-growing regions on the left bank of the Upper Missouri promise a rapid settlement upon the opening of a line of travel and transportation to the eastern markets. Each section of the road will, immediately upon its opening, from local traffic alone, present excellent returns for its investment.

The eastern portion of this route will be temporarily superseded by the Saint Paul and Pacific Road, now in rapid process of construction. It embraces a main line to Breckenridge, on Red River, with authority to continue down the Red River Valley to the international frontier, and, also, from Big Stone Lake to a point on the Missouri River north of the forty-fifth parallel. It likewise has a branch line from St. Paul to Watob, 80 miles long, which is finished. Of the main line, a section of 96 miles to Willmar is complete and open to the public. These lines are endowed with a land grant of 20 sections per mile, under the acts of March 7, 1857, and March 3, 1865. The entire distance to Breckenridge will be open for business at an early day, a distance of 206 miles. The operations of the last calendar year embrace the transportation of 148,723 passengers and 76,793 tons. The gross earnings amounted to \$373,448, and the operating expenses to \$235,037. The total land subsidy accruing under the grants of 1857 and 1865 are estimated to cover 2,635,000 acres. The road and its equipment with the lands in the grant are mortgaged to discharge indebtedness already incurred for construction. Land sufficient, of choice quality, still remains at the disposal of the Government for the completion of the line, and probably to leave a surplus. The State has granted to the company the privilege of town building along its line, from which it will derive a very considerable emolument. It is thought that this will secure an enhancement of the landed endowment of the company, amounting to \$1,000,000. This road has already demonstrated its importance and value by attracting a large Scandinavian population to the fertile valley of Red River. It taps the important and unique overland trade of the Red River country, now carried on by half-breeds in large caravans of ox and dog carts, sometimes numbering 1,500 in a single train. At St. Paul the eastern connections of this line are already extensive, and will still further increase, bringing it in close relations with the railroad system of the Mississippi Valley and of the Atlantic slope.

The opening of a southern transcontinental route within a few years seems to have been fixed upon in the public mind as a requirement of the times. Several enterprises now aspire to meet this public expectation. The Kansas Pacific company, originally authorized as a branch of the Union Pacific, having transferred its franchises west of Denver to the Denver Pacific Company, now aspires to the dignity of an independent through line. Preliminary reconnoissances have been made along the thirty-second and thirty-fifth parallels, following in the track of the initial explorations along these lines made by the Topographical Corps of our Army under the act of 1853. Either of these routes would present special advantages for construction and would accommodate large industrial and commercial interests. The preference now seems to be inclining to the thirty-fifth parallel. The company, however, is awaiting the aid of land and loan subsidies to assist in this work, about which it may be suggested there is no certainty in the present state of public opinion; and with the newly acknowledged jealousy of landed monopolies, the people seem convinced that by this time further Pacific Railroad building is an enterprise possessing within itself elements of profit sufficient to secure its execution without Government aid.

The Atlantic and Pacific Company also proposes to occupy the zone bordering the thirty-fifth parallel. This company was incorporated by act of July 27, 1866, with authority to construct a line of road and telegraph from the west line of Missouri and Arkansas, passing by Albuquerque, Agua Frio Pass, and the headwaters of the Colorado Chiquito River to the Pacific Ocean. This road is endowed with 40 odd-numbered sections per mile in the Territories, and with 20 sections in the States. About 200 miles of its line lie within the lands of Texas, being endowed from the Texas State lands. A consolidation has been effected with the South Pacific Road of Missouri. It has already completed 291 miles, extending from St. Louis to Pierce City, and is pushing the work as fast as the financial means are provided. The company has issued bonds to the amount of \$25,000 per mile. Its gross earnings during the last year amounted to \$348,217, and the operating expenses to \$144,745.17, leaving a net profit of \$203,472, or nearly 60 per cent. of the entire receipts.

The Memphis, El Paso and Pacific Company, incorporated under the laws of Texas, and endowed with 16 sections of State land for an extent of 800 miles, proposes to build a line westwardly, traversing the zone bordering the thirty-second parallel. It asks of Congress only the right of way through the public lands, proposing to cross the Territories of New Mexico and Arizona, connecting with the proposed line of the San Diego, Gila and Southern Pacific Company of California, the franchises of which it has purchased. Some time ago it placed under construction some 65 miles of its eastern portion, and was preparing to construct the western section in California. It thus appears that responsible parties are ready to complete the lines of transcontinental road along the thirty-fifth and thirty-second parallels. We may look for the early completion of these lines. To one of them, the Atlantic and Pacific, an ample landed subsidy has been granted, and a promising commencement has been made. The offer of the Memphis and El Paso Company to construct their line, with the sole franchise of the right of way through the public domain, indicates that this enterprise is becoming sufficiently strong to secure it an accomplishment. Within the next decade, and most probably prior to the celebration of the first centennial anniversary of American independence, on the 4th of July, 1876, there will be at least four transcontinental lines of railway crossing our public domain west of the Mississippi. But east and west lines will be a necessity only until a homogeneous civilization has been established round the entire world. The full development of home production in each latitude of the earth's surface will diminish the necessity of exchange of products of similar isothermal zones. The climatic differences of successive zones of the earth, however, will give scope to a large extension of north and south lines. Our great thoroughfares of the future, instead of following parallels of latitude, will most probably follow the meridians of longitude. The necessity for the construction of lines running in such directions is becoming more apparent, and already quite a number of north and south lines have been projected, especially in the public domain.

From Junction City, on the Kansas Pacific Road, the Missouri, Kansas and Texas Company is constructing a line of railway and telegraph down the Neosho Valley to Fort Smith, in Arkansas, where it will make close connections with the railroad system of the Gulf States. This company—late the Southern Branch of the Union Pacific Company—holds a land grant of ten sections per mile within the limits of Kansas, the entire length of the line being 325 miles, of which 1.8 miles, from

Junction City to Chetopa, are opened and in operation. Its bonds, to the amount of \$12,000,000, were issued November 14, 1869—of which amount there were outstanding on the 1st of May last, \$4,221,000. In its northern projection this line will ascend the valley of the Republican Fork of the Kansas River, cross the Union Pacific at Fort Kearny, and form a junction with the Northern Pacific at some point in Montana.

The Leavenworth, Lawrence and Galveston Road, by act of March 3, 1863, was endowed with a landed subsidy of 20 acres per mile. It passes the Osage River at Ohio City, and runs southward to meet the Houston and Texas Central Road at Preston, or at some other point on the Red River. It has been completed to Garnett, 52 miles from Lawrence. By act of July 25, 1866, a land grant of 20 sections per mile was made to the State of Kansas in behalf of a projected line of railway and telegraph from the eastern terminus of the Kansas Pacific Road, southward through the eastern tier of counties of Kansas, to meet a road under construction from Galveston, Texas, to Preston, on Red River. This line, now designated as the Missouri River, Fort Scott and Gulf Railroad, has been completed to the south line of the State of Kansas, 160 miles. During the past year 36,426 tons were carried, realizing a gross receipt for freight traffic of \$137,052; the mail, express, and miscellaneous receipts were \$5,965; and the passenger receipts, \$119,545; making a grand total of \$262,562. The total expenses were \$116,626, leaving a net profit of \$149,936, or 57 per cent. of the entire receipts. The earnings per mile were \$5,413 66. This company has issued \$5,000,000 of first mortgage bonds. Of the \$2,000,000 second mortgage bonds, \$1,400,000 have been issued. The company owns 650,000 acres of Cherokee lands, and 125,000 acres donated by the State of Kansas.

By act of March 3, 1863, a similar grant was made to the Atchison, Topeka and Santa Fé Railroad. Of this line 28 miles have been completed, from Topeka to Burlingame, with a further portion under contract for immediate construction. First mortgage bonds, at the rate of 7 per cent. interest, due July 1, 1899, amounting to \$15,000 per mile, have been issued.

By act of July 23, 1866, the same grant was made to the St. Joseph and Denver City Road. This company has completed 41.67 miles, with 69.41 in progress. Its first mortgage bonds on 111.03 miles, for \$1,500,000, or \$13,503 per mile, have been issued for 30 years.

From the statistics collected in Poor's excellent Railroad Manual, it appears that all portions of our country increased their railway mileage during the year 1869. The New England States increased from 4,019 to 4,301 miles; the Middle States increased from 9,765 to 10,752 miles; the Western States and Territories east of the Sierra Nevada from 16,889 to 19,765; the Southern States from 10,693 to 11,272; the Pacific States from 889 to 1,164; the whole Union from 42,255 to 47,254. Railroads have been constructed in all the States, and in the Territories of Wyoming and Utah. Railways have been projected in all the other Territories except Arizona and Alaska. The railway mileage of the United States now exceeds 50,000 miles. The past and present years have presented a remarkable activity in this grand movement, nor is there any reason to suppose that this activity will receive any considerable check, at least, until all parts of the country have been put in easy communication. The New England States have one mile of completed road for each 15.12 square miles. When the whole country shall have arrived at that density, the entire railway mileage will be over a quarter million. The ratio of the Middle States will give over 300,000 miles. At the ratio of Ohio, the aggregate will be over 350,000 miles. The attainment of these results is simply a question of time. From the completion of the circle

of civilization round the northern hemisphere of the globe, we may expect commercial and industrial activities to increase in a greater ratio. The railways of the whole world at the close of 1869 embraced an aggregate mileage of 118,559, of which 49,801 miles belong to North America, 445 to the West India Islands, 1,424 to South America, 61,043 to Europe, 4,474 to Asia, 583 to Africa, and 789 to Australia. Our continent is rapidly gaining upon Europe, and will soon present an aggregate far in advance of that continent.

The entire cost of construction and equipment of the railways of the world is estimated at \$11,445,104,373, averaging \$96,619 per mile. Of this amount our North American roads represent \$2,267,061,313, or \$45,523 per mile. European roads cost, in the aggregate, \$8,252,390,863, or \$135,189 per mile, being the most costly in the world; and of the European roads the most costly are the British roads, averaging \$176,269 per mile. Our own railways present a very modest figure in the expense of construction, amounting, in the aggregate, to \$2,041,225,770, averaging \$44,225 per mile. The New England roads average about \$40,000; the Middle States roads about \$55,000; the Southern States about \$30,000; the Western roads about \$44,000; and the Pacific roads about \$50,000 per mile. In our cheaper lines, however, we find a greater annual outlay for construction and repair. The English roads net nearly 50 per cent. of their total receipts, but this large percentage of receipts represents a smaller percentage on the capital invested. As investments, then, our roads continue to present special attractions to foreign capital. In this respect our roads are approximating gradually the standard of the European roads. Those costly enterprises are entirely unsuited to the wants and circumstances of our pioneer roads, which could not command any such an amount of capital as would be required to construct lines upon the European model; nor would the business of our roads enable them to pay anything like a remunerating interest upon such a capital.

The tonnage transported upon our roads during the year 1869 was considerably over 100,000,000 tons, after making a very liberal allowance for duplicated tonnage. Deducting, further, some 20,000,000 tons for coal and other low-priced freight, and allowing an average of \$1.50 per ton for the remaining 80,000,000 tons, we have \$12,000,000,000 as the approximate value of the freight actually transported over our roads, or six times the amount of capital actually invested in them. The wonderful growth of our internal commerce is illustrated by comparing these aggregates with those of 1851. The transportation of that year did not exceed five and a half million tons, with a value not much exceeding \$80,000,000. The average annual increase of tonnage and value of freight nearly equal those figures. In 1850 the tonnage of merchandise, compared with population, gave about 400 pounds per capita. In 1860 the average was 1,200 pounds per capita. In 1869 it had risen to 3,816 pounds per capita. The values of tonnage, per capita, at these different periods averaged \$29, \$84, and \$285, respectively. It is remarkable that the most rapid increase of tonnage and value of freight is found in the older States. The tonnage of the Massachusetts roads rose from 4,094,364 in 1860 to 8,044,498 tons in 1869, or nearly 100 per cent. increase, whereas the population has not increased in that time more than ten per cent. Taking into consideration the increase of 1870, we may easily see that in a single decade the demand for railway transportation for a settled population has nearly or quite doubled. As compared with the returns of 1851, we find that less than double the population of that period is now furnished with nearly six times the length of railway that then existed, and that the tonnage per mile has

nearly quadrupled, making more than ten times per capita the amount of transportation that was found sufficient for the wants of the American people.

The earnings of our roads present several points of interesting inquiry, illustrating the growth of our civilization. The gross earnings for 1869, in round numbers, were about \$400,000,000, the freight receipts being to the passenger fares about in the ratio of 7 to 3, or \$280,000,000 to \$120,000,000. In the earlier history of railways the preponderance is generally on the side of the passenger earnings, but as the production of newly opened areas is stimulated, and as their relations to the markets at the other end of the line become definite and settled, it is found that the freight traffic gains upon and finally surpasses the passenger traffic. To such an extent has this tendency been developed that it has been seriously agitated to establish railroads exclusively for freight which shall relieve the immense pressure upon the transporting capacities of existing lines. The enormous distance across the continent has raised the price of through freights to such a figure that only high-priced merchandise, or raw material representing a high money value, such as gold and silver ores, will afford sufficient margin. But even this difficulty is now in process of removal. The transportation of flour at \$18 per ton—ten barrels to the ton—from San Francisco to New York has been tried by way of experiment. This cost is but about \$3 per ton more than by sailing vessels around Cape Horn, but it is thought that a transportation occupying but three weeks at most will give advantages over a long voyage of from three to five months that will more than pay the difference. The experience of railways shows a gradual increase in their capacity to compete with cheaper water transportation. This is shown in my last annual report, in the case of Holland and Belgium. At the separation of these countries in 1830, the former possessed a much larger commerce and a greatly superior salt and fresh water communication. In 1835 the exports and imports of Belgium amounted to but \$50,000,000, which aggregate was fully doubled by the foreign trade of Holland. The inauguration, in 1833, of the Belgium railway system, under the superintendence of an able English engineer, has since changed the relations of the parties; the Dutch, relying upon their ocean and canal navigation, neglected to take note of this rivalry until the remarkable strides of Belgium commerce could no longer be ignored. In 1856 the Dutch-Rhenish Railway was constructed to recover their lost ground, but Belgium had commercially triumphed, the imports and exports of Holland in 1862 having been not quite \$300,000,000, while those of Belgium approximated \$400,000,000.

Our railway system is developing its leading lines of transcontinental communication. The initial line of this character, with its branches, the Union Pacific and Central Pacific, has already constructed, under various acts of Congress, 2,500 miles. The influence of this work upon the development of our national resources is already felt as a mighty power of civilization. A vast commerce, now in its infancy, will ultimately flow through this great artery and through the rival lines that are destined to speedy construction. Its influence has already been felt in the absorption of the travel that formerly crossed the Isthmus of Panama, showing the tendency of the east and west lines of the world's commerce to settle along the parallel which passes through the south of Europe and along the main line of navigation of the Mediterranean Sea. The completion of the Suez Canal during the last year has very materially shortened the lines of water communication to Eastern Asia across the Atlantic.

The grand source of profit to railway enterprise in the United States is in the local passenger and freight traffic. When the foreign trade of a nation comes to bear an undue proportion to its domestic trade its influence is for evil. A healthy foreign trade can grow only out of a massive home industry and traffic. Instead of constituting a chief it should hold but a subordinate part in the activities of a nation. The crowning benefit of railways to the social economy lies in their stimulation of local production and exchange. Hence the exclusive construction of through lines which shall serve only the purposes of foreign trade and a very few points in the interior should be regarded as a departure from the line of normal development.

The multiplication of local lines serving the wants of remote communities is a favorable indication. Massachusetts now possesses a mile of road for every five square miles of territory, sufficient, if mathematically distributed, to place every point of the State within two and a half miles of some working line of road.

The rapid increase of our railway traffic has added a wonderful power to our nationality in the development of our resources. We are no longer the same nation that came out of the war of the rebellion with an enormous debt, with deranged finances, and a chaotic industry. Each year the public debt has borne a smaller proportion to the values of our real and personal estate, a large part of which values has been created by our new railway communications.

Within the last two years an economic administration of the finances has enabled the General Government largely to reduce the principal of this public debt, and consequently to diminish its interest. The value of the tonnage annually transported over our roads is now about five times the amount of our national liabilities. The increasing financial resources of our Government have enabled it to reduce the taxation about \$80,000,000 per annum, with the expectation of devolving upon the coming generation a portion of those obligations contracted for the vindication of the integrity of our Union, the benefits of which will inure to our latest posterity. Yet the growth of our resources will soon raise the income disposable for the redemption of the public indebtedness, even under a reduced taxation, to a sum equal to the largest amount that has as yet been disbursed for this purpose. The agency of the public land system, in securing this enormous impulse to our physical development, has already been pointed out in this report and in the previous reports of this office.

Before leaving this branch of the subject, however, it is deemed in place to reiterate the opinion, previously expressed, that the process of subsidizing railroad enterprises by donations of public land has been carried fully as far as is compatible with the public interest. Railway construction has now become an investment of capital and labor which stands upon its own merits, overborne by no great public interest requiring the interference of Government.

EXAMINATION AND ENTRIES ON LAND LEDGERS OF THE MONTHLY RETURNS OF LANDS SOLD, LOCATED WITH BOUNTY-LAND WARRANTS, AGRICULTURAL COLLEGE SCRIP, AND ENTRIES UNDER THE HOMESTEAD LAWS.

The land ledgers or tract books of the General Land Office are designed to exhibit in brief the history of every individual transaction, in the way of acquiring title, under legislation of Congress in regard to the ordinary disposal of the public lands.

These ledgers, according to townships and ranges, are opened for every district land office in the United States, and upon the receipt here of the returns of land disposals such returns undergo critical examination and test as to the regularity of the proceedings in each case, and the accuracy of the title-papers as to the correctness of description of tracts, of area, of the consideration, and thereafter each and every sale, location, and selection are transferred to our land ledgers, thus affording at a glance information as to every land transaction from the earliest period to recent dates.

The various muniments of title, where found correct, are thereafter carefully arranged in numerical order of date, passed over for the issue of patents or complete titles in favor of the beneficiaries, while in regard to cases found defective, measures are promptly taken for their adjustment.

EXAMINATION AND ADJUSTMENT OF THE RECEIVERS' QUARTERLY ACCOUNTS.

Preparatory to the adjustment of a receiver's detailed quarterly account the items therein to the credit of the United States are each carefully compared with the entries embraced in the register and receivers' monthly returns for the same quarter; the columns in the account appropriated to the areas of the tracts of land sold, and the purchase money, are properly noted.

Adjustments of the accounts are then prepared in the form of a General Land Office report to the Treasury, in which the receiver is debited with the gross amount of purchase money received during the quarter, the amount of \$10 and \$5 fees, and register and receivers' commissions on homestead entries, fees for locating military warrants and agricultural college scrip, while he is credited in the adjustment with the moneys deposited to the credit of the United States Treasurer and any payments he may have made upon Treasury drafts, where such deposit and payment have been carried into the Treasury by warrant, and also with such amount as may have been returned on account of payment made with revolutionary bounty land scrip.

Such adjustment, accompanied by the receiver's quarterly accounts, the covering warrants, revolutionary scrip surrendered, and a schedule or statement of such differences as may have arisen in the adjustment, are then sent to the First Comptroller for review and final action.

In regard to the quarterly disbursing account similar reports or adjustments are prepared, in which the receiver, acting as disbursing agent, is debited with the amount of the draft issued in his favor to cover the current expenses of his office during the quarter, and is credited with such items as may have been paid by him on account of salaries and commissions, expenses of depositing the public moneys, as also with legally-authorized contingent expenses of his office, so far as such payment may be supported by proper vouchers.

The adjustment, accompanied by the disbursing account and vouchers, is in like manner sent for review and final action to the treasury.

The accounts of the receiver and disbursing agent have been adjusted to 30th June 1870, and sent to the Treasury for settlement.

FUND ACCOUNT.

Accounts of the five per cent. fund accruing to the States of Michigan, Iowa, Wisconsin, Minnesota, Kansas, Nebraska, and Oregon, and the

three per cent. to Missouri, have been adjusted to the 30th June 1870, and in every instance where a balance has been found due to a State the account has been reported to the Treasury for payment.

Nothing has accrued to the States of Ohio, Indiana, Illinois, Arkansas, Mississippi, Louisiana, Alabama, and Florida since the adjustments heretofore reported.

In the case of California and Nevada there is no legal provision authorizing a percentage upon the net proceeds of the sales of the public lands within their respective limits.

CALIFORNIA PRIVATE LAND CLAIMS AND DONATIONS IN WASHINGTON TERRITORY AND OREGON—CALIFORNIA SPANISH AND MEXICAN TITLES.

At the date of our last report, June 30, 1869, there had been reported to the General Land Office for examination, and, if all were found correct, for the issuing of patents, old Spanish and Mexican titles in California, covering by actual survey, under the American system of surveying, an area of 6,732,599.87 acres. During the fiscal year ending June 30, 1870, this area was increased by returns of survey, embracing 362,940.46 acres, making an aggregate of claims of this kind reported, of 7,095,540.33 acres, for which patents have issued in 313 cases, covering 5,023,714.68 acres, leaving a balance of 2,071,825.65 yet unpatented of the claims reported for the action of this office and the Department proper. The claims for which patents have not been issued are in various stages of adjustment, some having been found defective and requiring further report from the surveyor general; others having been decided by this office and taken by appeal to the head of the Department; and some have not yet, in the regular order, been reached for definitive action; the recent increase in the value of land in California, in consequence of the great demand for land in that State for purposes of actual settlement, have made it desirable for the ranch claimants to have the lines of their claims definitively settled so as to avoid conflicts with parties making settlement under the homestead and preëmption laws.

DONATION CLAIMS IN THE STATE OF OREGON AND WASHINGTON TERRITORY.

The act of Congress approved 27th September 1850, creating the office of surveyor general of public lands in Oregon, and making donations to actual settlers, 9 U. S. Stat., p. 496, as amended by the act of February 14, 1853, 10 U. S. Stat., p. 158, July 17, 1854, same vol., p. 305, and 25th June 1864, vol. 13, p. 184, secured to settlers of various classes mentioned in said acts a fee-simple title to 640, 320, or 160 acres; the amount to which the claimants were entitled being dependent upon date of arrival in the Territory, date of settlement, and whether married or single. Under these laws there have been reported from the district land offices in Oregon and Washington Territory 6,021 donation certificates, covering 2,123,137.68 acres, or an average of 352.66 acres to each claimant, and of the amount thus reported patents have been issued embracing 1,694,582.55 acres.

TOWN SITES.

The operations under the various town-site laws for the year just closed have been very extensive, and we are beginning to realize the

advantages derived from the acquisition of the public lands, under the recent acts of Congress on this subject. Quite a number of entries have been made in the Territory of Utah, yet to be finally passed upon, awaiting proof as to the non-mineral character of the land; the act of March 2, 1867, forbidding entries of lands containing mines of gold, silver, cinnabar, or copper.

The decision of April 21, 1869, on the application of the town of Nevada City, California, in which the municipal authorities were allowed to enter land in which the minerals were shown to be exhausted, has led to the application, by other towns in the mining districts of California, for the entry of their respective town sites, under the statute referred to, incontestable proof being offered that the mines were exhausted and the tracts selected were more valuable for purposes of trade than for mining. An act was passed by Congress July 1, 1870, amending the act of 1867, in so far as it applied to Salt Lake City, allowing the proper authorities to enter lands in trust for the full number of inhabitants claimed, which is 15,000, and therefore an entry embracing an area of 5,760 acres can be made. Numerous towns are springing up along the line of the Pacific Railroad, and applications are constantly being made for the entry of the Government sections by the proper corporate authorities, or by the county judge, as provided in the act of 1867. The city of Cheyenne, in Wyoming Territory, has recently been surveyed and will soon apply for an entry of that portion of the town site which does not inure to the railroad. As this great highway of the nation passes through so much of the public domain, it is expected that the inhabitants of these towns, now so rapidly building, will secure for themselves a title to their homes under the beneficent operations of the town site laws. The number of cities and towns on the public domain and in the older States of the republic may be estimated from the fact that post offices have been established at 28,503 localities, these being all linked together by the mail and telegraph system; this number being an increase of 1,279 in a single year.

ADAPTATION OF THE PUBLIC DOMAIN TO SPECIAL BRANCHES OF AGRICULTURAL PRODUCTION.

The enlargement of the range and scope of production is essential to the expansion of our civilization. The resources of the public domain are rapidly becoming better known by practical acquaintance, as population extends in every direction. From information constantly arriving at this office, it appears that those resources are in a state of more rapid development than at any previous period in our history. Not only is the area of settlement expanding, but the effectiveness of cultivation is enlarging. A remarkable feature in the general character of our agricultural industry is the rapid westward shifting of our cereal production.

In 1859, the quantity of wheat harvested west of the Mississippi was 25,000,000 bushels. In 1867 it had increased to 65,000,000 bushels, and in 1868 to 70,000,000 bushels. The value of this crop to the new settler, representing, as it does, the maximum of money value with a minimum outlay of labor, is beyond comparison. Hence the cultivation of this cereal may be expected rapidly to increase within a short time in all the newly-settled States and Territories of the public domain.

In the older public land States in Ohio, Indiana, and Illinois, however, the proportion of the wheat to other crops is declining. Other branches of agricultural product are there found more profitable, leaving to

the new States the quicker returns, but less permanent profits, of cereal industry.

In the older portions of the public domain the scope of agriculture is becoming more varied and elaborate. The wants of advanced society require a more scientific culture and greater division of labor. Hence we may expect in these the introduction of new staples as they grow more populous. When the necessities of life are provided for by a liberal attention to the more pressing necessities of food and clothing, an increasing attention to the comforts and luxuries of life may be expected. There are several branches of industry pursued in the Old World which, it is believed, may be successfully introduced in some portion of our public domain. These additions, far from interfering with, or in any way crippling, the industries already in operation, will but supplement and render them more valuable by increasing the home demand for their production. Animated by these views, the Commissioner has been disposed, on every proper occasion, to elicit from the local officers of the public land system such information as lay within their reach in regard to the agricultural and other resources of their particular districts. These it is proposed, from time to time, to give to the public in a systematic and authentic form.

With this purpose there has been prepared in this office papers, which accompany this report, on the growth of tea and silk, believing the information therein contained will be of value in directing attention to the cultivation of these great staples. The Commissioner has no doubt that particular localities of the public land States and Territories will ultimately develop a capacity for these beautiful branches of agricultural industry, and realize therefrom an immense value of increased production.

In the previous pages of this report will be found a résumé of the resources of the public domain, and a glance at their capacity for future expansion. The American citizen, on reviewing the splendid natural endowments of his country, finds ample reason for patriotic exultation. In agricultural capacity the soil and climate present an endless variety and teeming richness of production such as no nation, not even the Roman Empire, ever enjoyed. Our crop of breadstuffs, amounting to 1,200,000,000 bushels per annum, worth \$1,000,000,000, gives an average of 40 bushels to each man, woman, and child of the population. If, in addition to this, we consider scores of millions of slaughtered animals, our hundreds of millions of bushels of root crops, our unmeasured abundance and exquisite richness of fruits, we find a provision for the sustenance of our population immensely transcending its wants, and providing a large surplus for the crowded populations of Europe.

But our growth of animal and vegetable fiber is on the same magnificent scale. Our wool, cotton, flax, and silk are the basis of an industry of the grandest proportions, and of the most delicate and subtle manipulation. In all departments of our agriculture we meet with the same characteristics of massiveness and of richness. But all this is but the imperfect product of partially-developed resources.

Of our agricultural land in the United States not one-tenth has in any one year been subject to cultivation. Our agricultural system has been of an unsettled and experimental character, evolving sound principles only after numerous failures and an immense waste of time and labor. When the great lessons of agricultural science shall have been learned, not only by professional experts, but shall be diffused through the mass of the farming population of our land, we have reason to hope that our agricultural production will receive an expansion greater even than the increase of our population, thus providing a still broader basis of comfortable subsistence in the future.

Our mineral resources, of which a brief sketch will be found in this report, are of the same splendid character. In the exploitation of precious metals or of useful minerals our resources exhibit a breadth and massiveness of deposits, with a concentration of intrinsic and commercial value upon developments, which transcends the mineral endowments, so far as known, of all the rest of the globe. In our gold and silver we have the means of regulating the world's exchanges; while in iron, copper, lead, tin, and zinc, with enormous stores of mineral coal to work them, we have awarded to us the mass of the industrial power of the future.

We are now attacking the enormous accumulations of oriental industry and trade, which have, for at least two thousand years, been draining Europe of its metallic currency, especially of its silver. At least ten thousand millions of dollars, since the days of Pliny, have been buried in the great financial abyss of the east. Social science has been puzzling itself with the question, "What has become of this enormous accumulation in countries where so small a metallic circulation is known to exist?" That drain still continues. In the report of this office for 1868, our special capacity of dealing with this problem was pointed out, with the influence of our enormous deposits of gold and silver upon the Pacific coast, in seizing upon oriental trade, by meeting this absorbing demand for silver in the East. Our commercial relations with India, China, Japan, and the East India Islands are daily becoming more intimate and effective. We have special influence with the Chinese and Japanese governments, from the fact of our non-complicity with the past aggressions of the European powers. We occupy the great commercial belt of the fortieth parallel, to which the east and west lines of the world's trade are rapidly adjusting themselves, and are assuming each year a larger control of their traffic and travel. Our present maritime depression, we have reason to believe, is temporary, growing out of infractions of international comity on the part of our great commercial rivals in Europe during our late civil war. When once more we adjust our productive and trading systems, we will have escaped disturbing causes which have marred our prosperity in the past, and with a clear field our ascendancy in foreign commerce promises to be as decided as it was before the late civil war.

If our capacities of production are wonderful, they are supplemented by equal facilities for transportation and exchange. Our natural means of communication by internal navigation surpass those of all other nations. The arrangement of our lake and river systems is such as to penetrate the continent to its very heart with great water highways, while the lack of impassable mountain ranges, such as isolate the parts of the Asiatic Continent, invite the construction of artificial communications upon a more effective scale than civilization ever before enjoyed. The extent of our railway and canal communications is treated of in the foregoing pages, with their rapid increase in construction. The domestic trade of the Union is at least six or seven fold the amount of our national debt.

But not only are we endowed with facilities for domestic trade for the exchange of raw material and manufactured products between different portions of our own country, but we also hold a commanding position right in the main axial line of the world's commerce. By the construction of transcontinental lines of railway, we have deflected a large proportion of the travel and transport between Eastern Asia and Western Europe right across our territory. We find, in relative importance, the artificial highways gaining upon the natural communications. Even the cheapness of ocean transportation is largely counterbalanced by other

advantages of railroad travel, including directness and speed of transit. We find, further, that the tendency of high civilization is to condense values for transportation by manufacturing raw material as far as possible upon the field of its production. Thus the expense of transport is made to bear the smallest possible ratio to the value of the freight, and the largest margin is saved to the producer.

Under such conditions we find our through foreign traffic annually increasing, and our controlling influence upon the world's civilization constantly enhancing. But this great country is the broad empire of democracy. Here the noblest principles of freedom are embodied in the most effective political and social organization. Here the oppressed of all nations may come and find a welcome to our immense wastes of fertile soil. Here society is now being reconstructed with the choice blood and muscle of the Caucasian populations of Europe, developing a power for the subjugation of the great forces of nature never before known in human history. Here the practical relations of men to each other are infinitely diversified, while the latent forces of individual character are admirably brought out, creating a type of humanity capable of self-development and dependent upon no leading-strings of favorable influence.

This mass of civilization is dominated by intellectual and spiritual forces of transcendent power. The facilities for the transmission of intelligence exist in a measure never before known.

Postal and telegraphic communications now cover all parts of our older territory, and permeate the wilderness itself with great central lines, upon which will be engrafted a network of minor ramifications to meet each new settlement of pioneer agriculturists. The press is pouring forth its daily millions of periodicals and books, discussing every subject of public or private interest with an earnestness, a profundity, a clearness, and, above all, a freedom which is found to be perfectly compatible with the most perfect social order. All these intellectual activities are governed by moral and spiritual ideas, the growth of a Christian civilization. We find, then, in our national endowment every element of social organization that can minister to the welfare of society at large and of the individual.

In the development of national character and institutions, the genial policy of our public land system has had remarkable influence. In the endowment of canals and railways it has opened and multiplied the relations between men, developing the great ideas of reciprocity of interests and conduct. In the endowment of schools and colleges it has diffused the means of popular intelligence, and has enabled the people to grasp the great thoughts of self-government. But in the diffusion of proprietary interests in the soil, secured by its operation, is found one of its noblest features. While the peace of Europe is not assured even by a standing army of five and a half millions of armed soldiers, our social order is held steady by the intelligent coöperation of five and a half millions of landholders, amounting to one-eighth of the population. It is a trust hastening with more rapid steps each year to its complete discharge. The increasing rate of immigration will probably, by the advent of the second future generation, have appropriated the great bulk of our unoccupied domain. Its history will present some of the most remarkable features in the progress of civilization. May we not hope that when the relief it now affords to the pressure of social evils in the world shall have been withdrawn, those evils will themselves have been superseded by a higher and a more genial civilization.

Respectfully submitted.

JOS. S. WILSON, *Commissioner.*

The Honorable SECRETARY of the Interior.

OBSERVATIONS, ACCOMPANYING ANNUAL REPORT OF 1870
OF THE COMMISSIONER OF THE GENERAL LAND OFFICE,
ON TEA CULTURE.

TEA CULTURE—HISTORICAL SKETCH OF ITS EARLY HISTORY AND OF
ITS PROGRESS—THE ADAPTABILITY TO ITS CULTURE OF LOCALITIES
OF THE PUBLIC DOMAIN.

Since the last annual report of the Commissioner, a request was made to the Secretary of State of the United States that our diplomatic representatives in China be instructed to obtain from the tea districts of that country specimens of the soil in which the different varieties of the tea plant are grown, and to transmit the same for analysis in the General Land Office cabinet, with such information in regard to the geological character of the tea districts, climate, and conditions affecting tea culture, and modes of preparation for market, as might be accessible. The State Department duly responded to the application, and having invited the interposition of the diplomatic and consular authorities in China, this Department has received a sample of tea soil from a rich tea-growing district, accompanied by a satisfactory report on the subject. In that report it is represented that the region of tea country from which the specimen of soil we have received was taken is known as the Peling district, 15 miles from Fow-chow. The consul intended to forward a specimen from the Bohea Hills, 150 miles from the above-named city, but states that the feeling which exists in the minds of the natives there toward foreigners is such, that no foreigner would be warranted in the attempt to procure the same, while if a native were employed to perform the service there would be no certainty of his success; and yet it is hoped a specimen may be obtained from those hills through a friendly native tea broker. The specimen we have was taken from among thrifty plants on a plantation visited by one of our consuls. A considerable portion of the large quantity of black tea shipped from the port of Fow-chow is grown in the Peling district. The country is mountainous and broken, and most of the plantations are situated at an elevation of from 1,500 to 2,500 feet above the sea-level. They lie inland from the coast a distance of from 20 to 30 miles, and are protected from the sea breezes by intervening mountains.

The plants are grown on sides of the mountains which look toward all points of the compass. It is represented to this Department that the climate of this district is mild and even, the extremes of temperature during the year being about 36° and 104° F. The underlying strata of the whole district is granite, the soil itself being decomposed granite and apparently almost void of any substance of fertility. It is also stated that the only fertilizer used, which is described in the report to us from China, is gathered by the peasant women and deposited in large cisterns or vats prepared for the purpose, where it remains until thoroughly decomposed, and is then used in limited quantities in bringing forward the young plants, which require but little attention further than to keep them free from weeds and to gather the young leaves in spring and autumn.

In glancing at the topographical features connected with tea culture, we find that the Himalaya Mountain system projects an offshoot of no great altitude, traversing the entire length of Assam, the extreme frontier province of the Anglo-Indian Empire, and forming, in eastern projection, the boundary between the central and southern provinces of

China proper. The Yang-tse-kiang, in its southward course through the province of Yunnan, twice cuts through this range, leaving a detached portion on its northern bank. Parallel and diagonal chains occupy extensively the belt of the central provinces south of that great river. The province of Kwei-Chau has been called the Switzerland of China, because its surface is almost exclusively mountainous. This mountain range, with its offshoots, embraces all the localities in which the tea plant has been found growing spontaneously. As the home of one of the most important of the world's agricultural industries, it invites special attention, particularly in view of the efforts now making for its domestication upon the soil of the United States. Believing that many localities within the public domain are available for tea culture, the facts in regard to its habitat—its conditions of soil and climate, are here presented, in the hope they will be of use in directing attention to a new investment of American capital and labor, which it is believed will not only be profitable to those immediately interested, but advantageous to the public interest confided to this branch of the service.

The western portion of the mountain range above mentioned lies within the obscure tributary province of Assam. This region was invaded from China in the thirteenth century by the Ahoms, the earliest inhabitants of whom history speaks. This whole region, however, bears traces of an earlier civilization in its numerous and extensive ruins of cities and temples hidden away in forests and jungles, smothered beneath copious vegetation. These ruins indicate an elaborate system of productive industry, with advancement in the arts of civilization. The Mogul Mohammedans, conquerors of Bengal, after three abortive attempts to subdue this people, succeeded, A. D. 1555, in establishing themselves in the southwestern portion of Assam, now called Camroop. From the beginning of the seventeenth century the Brahminic doctrine had made successive inroads upon the ancient faith of the Ahoms, and in 1865 the reigning Rajah became a convert. From the chair of authority now occupied by the aggressive faith went forth propagandist influences too powerful to be resisted, and not only the religion but also the language of Bengal became general. Such sweeping changes, especially among stereotyped semitic races, could not fail to produce popular convulsions. Seditions, conspiracies, and assassinations utterly destroyed the national spirit, wasted the national resources, and gave the Ahoms an easy prey to their scheming neighbors, the Burmese, who not only conquered the country, but reduced the inhabitants to abject slavery, aggravated by the most barbarous cruelties. But few Ahoms survive these oppressions, cherishing, in obscure localities, the antiquated faith and manners of their race.

Among the few memorials of this nearly extinct people is their singular superstition in rejecting from the throne any prince of the blood mutilated or imperfect in any physical respect. In the frequent rebellions occurring under the old régime, parties having hereditary claims to the throne were often mutilated by their adversaries in order to prevent their accession. Assam came under British rule in 1825, a spoil of the war with the Burmese Empire, in which the Anglo-Indian boundaries received such broad eastern extension. The present population is mostly of Hindoo origin, though Mahomedans are numerous and scattered remnants of the aboriginal Ahoms are found. Assam occupies the valley of the Brahmapootra River for 160 miles, with an average breadth of from 20 to 70 miles. Its extremes of longitude are 91° and 96° east from Greenwich, and its extremes of latitude 26° and 29° north. It is divided into Upper, Central, and Lower Assam, the latter

being also called Camroop. Its present limits embrace an area of about 18,900 square miles, with a population variously stated at from 200,000 to 500,000. Sixty-one rivers and streams, affluents of the Brahmapootra, and generally navigable for light craft, present remarkable natural facilities for transportation and commerce. The soil is very rich, but, under the slipshod agriculture of the natives, it scarcely meets their limited necessities, presenting no surplus for export. Its principal crops are rice, sugar-cane, cotton, opium, lac, raw silk, coffee, gums, and caoutchouc. The lack of intelligent handling renders the crops inferior to what they might be under other circumstances. Iron, coal, limestone, salt, gold dust, and petroleum are found in quantities sufficient to indicate the presence of valuable mineral deposits. Timber is exported in considerable quantities.

But the chief public interest in this obscure locality centers in its tea culture. McCosh, in his "Topography of Assam," says: "The tea tree, the identical tea tree of China, grows as favorably upon the mountains possessed by the dependent hill tribes, the Kangtis, the Singphos, and the Maatucks, as the adjoining provinces of China itself, it only requiring the like attention upon its culture and manufacture to secure the same blessing to our country which has for such a series of years so materially added to the revenues of the Celestial Empire." Some writers have been disposed to insinuate that the tea trees of Assam are the result of a former artificial cultivation of trees imported from China. But nothing more than the possibility of the circumstance is urged in favor of such an opinion. The comparatively recent discovery of the wild tea trees in China and the wide range of localities in which they were found growing spontaneously along this entire range of mountains seem to furnish *prima facie* evidence sufficient for the rejection of this theory. On the other hand it has been maintained that the Assam tree is of a species entirely distinct from the China tree. The general bearing of known facts, however, is against this hypothesis.

As our knowledge of the tea culture in Assam is limited by the very imperfect and meager reports from that region, it is proposed here to dispatch this part of the subject prior to entering upon the fuller material furnished by the tea culture of China.

The existence of the plant in Assam was made known to the civilized world through the agency of two brothers, Robert Bruce and C. A. Bruce. The former went to Assam in 1823, with a stock of goods. The latter, an officer in the navy of the British East India Company, after the conquest of this territory by the British, went with the Rajah, who showed the naval officer a written contract, formally agreed upon between the Rajah and Robert Bruce, for the collection and delivery of a stock of tea plants for the benefit of the Anglo-Indian government. The British authorities made considerable efforts to organize the tea culture in Assam, but finally abandoned it to private enterprise. C. A. Bruce was for many years the superintendent of the government plantations, which, however, seem to have been carried on upon a scale and with a purpose purely experimental.

The following comparison of the tea soils of Assam and the Bohea Hills, though made a third of a century ago, may now be of interest. It is to be observed that the Chinese jealousy of foreigners, prevailing at that early day, compelled the East Indian authorities to procure the specimens through Chinese hands, and that, consequently, there were no means of verifying their identity.

Elements.	Assam.		Bohea Hills.
	Surface soil.	2½ feet below the surface.	Tea soil of China.
	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
Water.....	2.45	2.00	3.00
Vegetable matter.....	1.00	.80	1.00
Carbonate of iron.....	7.40	6.70	9.90
Silex.....	85.40	84.10	76.00
Traces of phosphate, sulphate of lime, &c.....	.25	.95	1.00
	100.00	100.00	100.00

It is remarkable that these soils contain no carbonates of lime, and only traces of its phosphates and sulphates. The combinations of iron embrace only the carbonates, the chemical influence of which differs widely from the oxides. Elsewhere these soils would probably be designated as poor yellow loam, and cultivators of cotton, tobacco, sugar-cane, would most probably reject them. They seem, however, to meet the wants of the tea plant. It would appear, also, that the vegetable elements of these soils are more valuable in proportion as their action is mechanical, rather than chemical, when they furnish a porous medium for the ready transmission of moisture. The soil must be dry, and yet possess a sufficient capillary attraction, and a convenient access to water to secure the requisite humidity.

On the plains the tea soil must be underlaid by a porous stratum, capable of transmitting promptly the abundant precipitation of the rainy season, and of drawing upon the stores of subterranean moisture during the dry season. On the hill-sides the natural drainage, secured by the slope, supersedes, to some extent, the necessity of this underlying porous stratum. The requisite qualities of soil for tea culture in Assam are found only in detached areas, not giving rise to a uniform extent of tea vegetation. It should be observed that the above analysis of tea soils from the Bohea Hills varies from later analyses. The climate of Assam presents something of the general features of that of China, depending, to a great extent, upon the alternations of the monsoons, but it is accompanied by a more copious rain-fall. From April to October, the rainy season, the lower portions of the valleys are almost constantly inundated. But as the tea plant in Assam develops a greater avidity for water than in China, this copious supply of fresh water seems to be beneficial; but, in order to escape the evils resulting from excess of moisture, the plantations on the plains are generally placed beyond the reach of inundation by selecting the higher lands.

Among the drawbacks to the tea culture in the country is the difficulty of clearing away the forests and jungles. The thickness of these around the tea plantations gives a hot-house closeness to the air, greatly stimulating the growth of the plants, which here attain a size double the average of the China plants. The labor available for tea culture in Assam is not near so effective as that of the Chinese, and the difficulties are enhanced by the greater size of the trees. The bodily effort in gathering the leaves is of such a character as to strain the muscles and to produce swellings. The low stature of the Chinese plants enables the laborer to gather the leaves in a squatting position. Transplantation

and cultivation tend to check this high growth, to which, it is thought, a thorough clearing of the country of its superfluous timber will greatly contribute. The free access of sunlight and air-currents has already had genial influence in thickening the foliage, and giving it finer color.

The more closely the leaves are plucked the more copious the subsequent crop, while failure to gather a first crop precludes the growth of a second.

Tea leaves grown in the full sunlight start earlier in the season and give out less moisture when rolled, but more glutinous matter. The juiciness of the leaves decreases as the season advances. Some kinds of tea cannot be made on a rainy day, as the Pouchong and the Mingeheew. The former can be made only from the first crop of leaves. These should be collected after ten o'clock a. m. on a sunny morning, after the evaporation of the dew. The Mingeheew can be made from any crop of leaves. The preparation of these teas differs from the Chinese methods only in minor and unimportant particulars. Leaves for the manufacture of both green and black tea are plucked from the same plant, and the color of the manufactured article, as in the case of the teas of China, depends entirely upon the process of preparation for market. For green tea, however, a more choice selection of leaves is made than for black tea, which latter may be made from any of the leaves gathered.

The trade of Assam is growing in value and importance. The British Government has manifested much anxiety for its development, and it is probable that ultimately it will become one of the important centers of tea production, when some of the economical difficulties now crippling the enterprise are removed. The growth and culture of tea in Assam are of late origin, as shown by the fact that there is no word for it in the Sanscrit language.

The central and eastern portions of the Himalaya Range, before mentioned as the original home of the tea plant, are contained in China, the oldest nation now subsisting upon the globe. It embraces a magnificent area of fertile country, endowed with superior mineral resources, and extending through a great variety of climate. It is penetrated by noble rivers, and intersected by a network of canals, thus presenting admirable natural and artificial means of internal transportation. Its extensive line of sea-coast places it in contact with the civilized world at a multitude of points, thus inviting extensive foreign trade. Its social system, productive and economical, is one of the remarkable phenomena of social science. Isolated from the conquering west by immense desert barriers, and by the unskillful navigation of the earlier ages of the world, the peculiar civilization of the Chinese race has grown with remarkable vitality. National prejudice, of the most inveterate character, has reënforced these geographical elements of isolation, and not until the power of progressive occidental civilization overshadowed the whole world did those prejudices yield to the admission of foreigners. The enormous fecundity of the Chinese race gave them such a mass of material for the composition of armies, that at an early day the scattered populations of the broad, outlying desert zone were brought into political subjection, a prestige which, in the declining military spirit of the Celestial Empire, has been perpetuated by imposing frauds. The extent of country outside the limits of China proper, and subjected to her sway, once amounted to ten times her own area, but the populations of the same were but one-fortieth of the governing people. The conservative character of the Chinese is nowhere more strongly manifested than in their voluminous literature. Possessed with the idea of their immeasurable superiority to the rest of mankind, politic-

ally, socially, and geographically, they represent China as the "Middle Kingdom" of the world, surrounded by sporadic fragments of territory, upon which the residue of mankind are compelled to pass an inferior and inglorious existence beneath the shadow of the Celestial Empire. Spurning the barbarous dogma of the rotundity of the earth, and treating it as a flat plain, they utterly ignore latitude and longitude. This renders futile an immense amount of their laborious geographical research; but in local topography it presents an abundance of reliable material. Gutzlaff estimates that a library of 3,000 volumes, by Chinese authors, on Chinese geography, might be collected with very inconsiderable effort.

China proper embraces eighteen provinces, occupying an area of 1,800,000 square miles, equal to nearly one-half of Europe, extending from longitude 96° to 123° east from Greenwich, and from 18° to 43° north latitude, with a population variously estimated at from 360,000,000 to 410,000,000, or between 200 and 300 to the square mile.

In cereal, esculent, fruital, and fibrous productions, it embraces a wide range of provision for the wants of its massive population. Rice, cotton, silk, grain, fruit, flax, and all other elements of domestic comfort and support, here exist in rich abundance; but the great distinguishing product, that now crowds the markets of the entire world, is tea.

The origin of the culture and use of tea in China, like all other elements of Chinese civilization, is uniformly assigned to a period of very great antiquity. Making reasonable allowance for this tendency, and comparing Chinese and other authorities, Mr. Ball, in his account of the cultivation and manufacture of tea in China, concludes that it was probably known so early as the fourth century of the Christian era, being then used only as a medicine. As a beverage it was probably used in the sixth century, but did not become general till the eighth or ninth century.

Chinese history and tradition seem to unite in designating the hill of Sung-lo, or Sung-lo-shan, longitude $118^{\circ} 56'$ east, and latitude $29^{\circ} 56'$ north, at the extreme east of Mong-shan, in the province of Se-chuen, as the locality in which the tea plant was first discovered, growing spontaneously. At other points in the provinces of Fo-kien, Che-kiang, Kiangnan, Kiang-see, and Hoo-quang, "everywhere among the mountains," the plant was subsequently discovered. These localities are all found within the limits of the mountain range before spoken of. The identity of this range with the Himalaya system in Assam is attested by Dr. Royle, a well-informed writer on geographical science. From this range, as a nucleus, this Asiatic tea culture has extended over 28 degrees of latitude and 30 degrees of longitude. It is not to be supposed, however, that the culture is profitable over the whole of this surface. At Peking, latitude 40° , and at Canton, on the verge of the tropics, the conditions of vegetation become either stunted or rank, and hence, in the intermediate zone, embracing the central provinces, we find the great mass of tea production, while the more valuable kinds are the product of the Himalaya Mountains skirting the southern border of the valley of the Yang-tse-kiang. It is probable that most of the Chinese provinces raise tea enough to supply their home market, but its cultivation for export is confined to the zone between the twenty-third and thirty-first parallels.

In China there are two kinds of tea plants, designated by botanists, respectively, as *thea bohea* and *thea viridis*, constituting a separate genus of the natural family of the Ternstroemiaceæ. A controversy has been raised as to whether these should be considered as different species of

the same genus or only as different varieties of the same species. It is also questioned, as before stated, whether the tea plant of Assam is of the same genus or species as the China plant. The distinction marked in the botanical names of the two Chinese plants has given rise to the erroneous assumption that black tea is produced exclusively from the *Thea bohea* and green tea from the *Thea viridis*; but more accurate information develops the fact that green and black teas are made from both of these plants, and that the color depends not upon any organic constituent principle in the leaves, but in the process of preparation for the market. It is true that the specific production of green and black teas is limited to certain districts, but this is the result of economic and financial causes. The finer teas, both black and green, are produced from the *thea viridis*.

The hill of Sung-lo, or Sung-lo-shan, in the province of Kiang-nan and districts of Hien-ning, latitude $29^{\circ} 56'$ north, and longitude $118^{\circ} 15'$ east from Greenwich, is famous as the locality where the *thea viridis* was first discovered. This hill, between 2,000 and 3,000 feet above the neighboring plains, is now very barren, and produces only tea enough for the consumption of the monasteries of bonzes or priests of Fo, located in the neighborhood. It is but slightly, if at all, cultivated, supplying this home demand by its spontaneous yield. In the lowlands of this district (low only in comparison with this hill, being of a very considerable altitude above the sea level) and in the lowlands of Moo Yuen, a few miles further south, are produced the greater part of the finer green teas of commerce. The local distinction between hill and garden teas in this neighborhood indicates cultivated or uncultivated teas. The hill tea grows wild, while the tea grown on the plains is mostly cultivated with great care. The fertility of the plains renders the outlay of additional labor especially profitable. The rocks outcropping in this part of the country are chiefly silurian slate, like that found in England, overlaid by a red calcareous sandstone, similar to the new red sandstone of Europe. The decomposition of this sandstone gives a reddish tinge to the soil of the barren hills. Few, if any, organic remains are observable in any of these formations. The flora is of a northern character. Genera common in England and Northern India are represented by numerous species, while tropical plants are unknown. The only specimen bearing any relationship to tropical vegetation is a peculiar species of hardy palm. A species of holly, strongly resembling the English holly, and various kinds of oak, pine, and juniper, exist in great abundance.

The grasses, ferns, and other low-growing bushes and herbaceous plants of northern countries are represented by numerous kindred species; yet it would be a hasty and unwarrantable inference from these analogies of geological and vegetable character that tea may be produced in England. Other conditions modify this problem, especially the climatic differences, which will be presently noted.

The headquarters of black tea production are found in the Bohea Hills, hereinbefore mentioned, a range of highlands projected from the Himalaya Range and running parallel to the seacoast, about 200 miles distant.

About four-fifths of the tea exported from China into England is black tea, while the preponderance of black teas exported to other countries is very observable. This locality is found in the coast province, Fo-Kien, and in the district of Kien-ning-fu. The mountains of Vu-ye, (corrupted into Bohea,) in the same district, about two leagues from Tsong-gan-hien, (latitude $27^{\circ} 47' 38''$), produce the finest black teas.

Among the different sorts are the Ming-yen and the best Souchong teas which, according to Bell, rarely find their way to Europe, and perhaps never, except as presents and in small quantities. This tea is generally known to Europeans under the name of Padre Souchong, from its having been cultivated by the bonzes or priests. It is also called Pao-ching tea, from being packed in small paper parcels. The Chinese call it Yen or Gam tea, from its growing on the ledges and terraces of mountains. Finally, it is called Ner-shan tea, or Inner-mountain tea, from the fact that the Vu-ye Mountains, the scene of its production, are incircled by several concentric ranges.

Around this Vu-ye Range, some ten or twelve miles distant, is another range, producing teas of a very similar, if not identical, character. It is very probable that most of the East India Company's best Souchongs were procured in this locality. Still further from the Vu-ye Mountains, from twenty to twenty-five miles distant, is the locality of the Way-shan, or Outer-range tea. It is gathered in thin, small leaves, of inferior strength, and, whether made into green or black tea, of very little fragrance. It serves, however, to adulterate and to injure the reputation of teas produced in the neighboring districts, which otherwise would stand high in the market. A number of other localities are noted for excellent black tea, but that of Vu-ye-shan stands præminent. The Vu-ye tea is divided, according to quality, into two kinds, of which the superior is called Yen and the inferior Chen tea. The former is found mostly in the northern part of the Vu-ye Range and the latter on the southern part. This difference of quality is supposed to result from difference in position and exposure. The Yen tea, produced upon the Yen or mountain terraces, enjoys a better exposure of sun and air, being sheltered from excessive wind currents, besides the superior fertilization derived from the washings of alluvial deposits from the higher lands to the roots of the plants. The hills from which the mass of the tea prepared for European export is gathered are not remarkable for height or abruptness of slope. They are more moderate in both these respects than the Vu-ye or Bohea Hills, which are also more rocky in their structure.

In regard to the soil appropriate to tea culture, a variety of opinions has been expressed by practical observers, especially by Roman Catholic missionaries resident in the province of Fo-kien. One assigns a light, loose vegetable mould, sprinkled with sand, rather moist, exposed to the east wind. Another thinks that the tea may be planted in a rich or poor, a sandy or a garden, soil, rather moist, and of eastern aspect. The exposure to or shelter from winds is of minor consequence. Another notes the fact that in Fo-kien, where there are many plantations, pursuing substantially the same general methods of production and culture, the results are very different, whether the leaves, the flower, or strength of the plant is considered. Some indescribable, unknown property of soil is alleged as the ground of this difference. The tea generally affects somewhat high elevations, a compact, rich soil, yet porous, and capable of easy transmission of water; a cold, humid temperature, and an eastern aspect. Yet these generalizations from some observations seem to be contradicted by others no less reliable. Du Halde, for instance, states that the soil of the Bohea Hills is light, whitish, and sandy.

A very elaborate analysis of tea soil was made by two able chemists, Dr. Van Essenback and Mr. L. C. Marquat. They described it as of strong ferruginous clay with no perceptible mixture of sand. It is an intimate mixture of silicious earth and clay, with oxyde of iron and manganese. The earth seemed to them to be "atmospherically dis-

solved slate, especially defective in carbonic acid, humus, lime, and magnesia." It would seem to have a considerable tenacity of moisture, judging from its deficiency in coarse sand. Specimens of soil examined by the great English chemist, Professor Farraday, give strikingly different results, but in the latter case there were no means of verifying the genuineness of the specimens themselves. Soil said to have been brought from the hill of Lapa, near Macao, exhibited 46 parts of sand in composition with 54 parts of ferruginous clay and other elements. Other specimens presented a greater or less proportion of sand. Variant testimonies might be multiplied, illustrating the fact that experience and observation have as yet detected no master elements of soil controlling tea culture. Doctor Wallich observes that "the tea may be easily satisfied with respect to soil." Kaempfer states that in Japan it is planted without regard to soil. McClelland makes the same observation in respect to the tea culture in Assam, expressing the opinion "that the vegetable matter in the tea soil acts only as an absorbent of moisture, as appears by the fact that where vegetable matter is greatest, alumina, the common absorbent principle of the soil, is least; and that the quantity of alumina is also in proportion to the degree of insulation of the soil in regard to moisture and the greater drainage to which it is exposed." From these facts he concludes that "the narrowest inference that we can draw from this is, that the same soil would not be suitable to the plant in every situation."

Climatic influences, if not more effective, are at least more easily apprehended. The climatic conditions of China may be divided into general and special. The entire zone of tea production is to a greater or less extent affected by the periodical winds called the monsoons, which prevail for six months in a year from north or northeast, and for the remaining six months from the opposite direction. The former is attended by cold, frost and dryness, entirely suspending the vegetative circulation, while the latter is accompanied by heat and moisture stimulating its vitality to the highest degree.

These divisions of the year do not amount, as in India, to wet and dry seasons; for in China rain-fall is distributed through the entire year. During the winter monsoon the rain-fall at Canton averages 11 inches, and at Macao 13 inches, or a little more than in London, England, during the same period. At Calcutta it barely averages 3 inches.

During the southwest monsoon the rain-fall at Canton is 67 inches, making 78 inches during the year. At Peking, however, the annual rain-fall is but 28 inches, being much less than in England, 16 degrees further north. From this it will be seen that the clouds charged with copious moisture from the Indian Ocean deposit the greater portion of their burden before crossing the northern limit of the tea zone.

The change of the monsoons in the spring is marked by meteorological changes calculated to awaken the functions of vegetation after its long hibernation during the cold, dry interregnum of the winter monsoons. From March to May, around Macao, the rain-fall seems to increase in almost geometrical ratio, and the elevation of temperature seems to keep pace with it. About the first of April the atmosphere becomes stagnant, warm, and close; mists and fogs cover the sea in the mornings and sometimes during the day; the hydrometer attains its highest range of humidity, and a considerable spontaneous deposit of moisture is observable on painted walls and other like objects. The increasing heat of the season, copious evaporation, and rapid alternation of sunshine and showers, have already produced a powerful and visible quickening of the functions of vegetable life. To these succeed the drenching trop-

ical rains which immediately precede the final setting in of the south-west monsoon about the first of May. These copious rain-storms are reproduced at intervals until the autumnal change of monsoons.

These phenomena of the southern provinces of China are also observable in the central provinces, which embrace the great tea zone, but they are of a less marked character. The variation of winds bringing south rains is common in this region so early as April, the green tea harvest commencing about the 20th of that month. At Ning-po, at this time, deciduous foliage is fully out, barley is in full ear, and the neighboring hills are covered with masses of golden yellow, the fragrant blossoms of the *Brassica sinensis*, or oil plant. To the north of Honan, however, in latitude 34° , the climatic phenomena exhibit a far less genial temperature at this season.

A prominent feature in the climate of China is its broad range of temperature. Humboldt, in his chapter on isothermal lines, observes that "the northern part of China, like the Atlantic region of the United States, exhibits excessive climates and seasons strongly contrasted. At Peking, for example, where the mean temperature of the year is that of the coast of Brittany, the scorching heats of summer are greater than at Cairo, and the winter as rigorous as at Upsal." Situated nearly a degree south of Naples, this capital is surrounded by frozen rivers and canals from November to March. The average night temperature is less than 20° F., and of summer between 80° and 90° . The mean variation between the warmest and coldest monthly means is near 60° ; solid blocks of ice are preserved for summer. The earth freezes to the depth of three or four feet, which accounts for the destruction of plants at Peking, such as Linnæus raised in Sweden nearly 20 degrees further north.

At Canton, on the verge of the tropics, the morning temperature averages 53° F. in winter, and 82° in summer. The mean range is from 57° to 84° , and the extreme range from 29° to 94° . The general climatic conditions affecting the tea culture of China are such as affect the eastern shores of great continents, modified by the periodic play of the monsoons.

The general temperatures of the tea zone of China, bordering the thirtieth parallel, are closely assimilated to those of the coast of France and Northern Spain, above the fortieth parallel.

The local temperatures of the tea zone are as yet very imperfectly understood, sufficient information not having been collected to enable us to determine their characters and variations.

The permission now accorded to foreigners, under late commercial treaties, to travel through and reside in China, are of too recent a date to admit of a sufficiently long course of meteorological observations; a class of inquiries which the Chinese regard with ignorant contempt, the offshoot of their arrogant prejudices against everything of outside barbarian origin. In the absence of such scientific observations, only a few general and meager facts have been collected.

In the green tea country, in the district of Whey-chu-foo, latitude $29^{\circ} 58' 30''$, in the province of Kiang-nan, the northern winds begin to prevail in September; the winter properly sets in in November, its severity being experienced in December. The younger tea plants must now be wrapped in straw to prevent being broken or injured by snow or wind. At times the cold is excessive, killing some plants and injuring others. A bleak dryness is the general characteristic of the winter, with snow, ice, and frost. The changes, however, are not so severe as at Canton. In April and May the winds have veered southward, bringing occasional

showers, but the southwest monsoon is not fully established before the latter part of May. In June the great rains set in, and in July the heated term commences, attaining an intensity fully equal to that of Canton.

The Bohea country, in Fo-kien, differs but little from the green tea districts in general temperature, though the tea men seem to think the cold not quite so severe, and the thickness of snow-fall and of ice somewhat less. This amelioration is ascribed to the local configuration of the country; the mountains forming the boundary between the provinces of Che-kiang and Kiang-si shelter the eastern valleys and their eastern slopes from the cold winds of the northeast and northwest. December and January are the coldest months. The Kien-kio-kee, a shallow stream winding about the Bohea Mountains, is annually frozen over, and vagrants here pick a precarious alms from travelers by scattering the paddy husks on the ice to prevent slipping.

The mid-day temperature in summer is equal to that of Canton, but the mornings and evenings are much cooler. Father Carssina states that the heavy snows in Fo-kien, falling in 1815 to the depth of from 33 to 49 inches, and attended by extreme cold, did no injury to the tea plant, and did not even retard the harvest.

At Amoy, the head of the coast tea district, in latitude $24^{\circ} 27' 36''$, where a large amount of tea is produced, especially for exportation, including some of the more delicately flavored brands, the temperature seems scarcely to vary from that of Canton. Accounts from other portions of the tea zone indicate the prevalence of severe frost and occasional snow at intervals up to the vernal equinox. From the foregoing it will be seen that the tea tree is exposed to wide extremes of temperature and to sudden and violent changes. It grows on the coast and in the interior to the western part of the empire, passing over to Assam.

If a plant is indigenous under all such circumstances, it must possess elements of hardy growth and capacity for a much wider range of cultivation than it has yet enjoyed.

It may be affected by local influences in flavor, quality, copiousness and size, as it is in its indigenous habitat; but its general success in many regions where it is yet unknown may be fairly assumed.

It is less injured by extreme cold than benefited by high temperature. In any locality, with a suitable composition of soil, combining a mean temperature of from 64° to 77° F., increasing after the vernal equinox to the summer solstice, with copious rains, which alternate with bright sunny days, tea culture would probably be a success. The moisture is necessary to the rapid and copious production of leaves, and the sunshine to the elaboration of those peculiar vegetable principles which give to the tea plant its intrinsic as well as its commercial value.

The tea plant in China is mostly propagated from the seed. Old trees, however, are sometimes cut down and their roots are permitted to remain in the ground to throw up fresh scions and leaves, which, about the third year, may be profitably used in the manufacture of tea. Sometimes the old root, if transplanted to a fresh soil, will send forth fresh rootlets and produce a renewed foliage.

In seed propagation the seed must be gathered in the month of Han Lee, corresponding to our October, dried in the sun, and packed away in baskets of moistened sand. The seminal principle exhibits a remarkable sluggishness, requiring a considerable period of fermentation to awaken its vitality prior to placing the seeds in the ground. If this packing process is omitted, a great many seed will fail to germinate.

In planting the shrubs it is to be observed that the tea plant seems averse to the collection of water about its roots, yet it needs a ready access to that universal solvent of the productive principles of nature. The soil, if level, should generally be rich. If on a sloping hill-side, a porous composition of soil will secure a sufficient access of productive and fertilizing elements washed down from higher levels by the rains.

From six to ten seeds are generally put in one hole, about an inch below the surface. When the plant begins to germinate it is not judicious to rake up the weeds. If the season be dry it is common to moisten the plants thoroughly with water in which rice has been washed, or to treat them either with liquid fertilizers or the manure from silk-worms. Water, lodging about the roots of the plants, will inevitably destroy them. The leaves will be fit for gathering in three years. The plants should be set out in rows about three feet apart.

The above applies to the *thea viridis*; a somewhat different process being used for the *thea bohea*. The latter is never manured, as this process is thought to injure or destroy its fragrance. The plants are bound together when about 14 inches above ground. The weeds are taken up once in each of the four seasons of the year, the ground turned up and new mold added. In many parts, especially in the province of Fo-kien, very little attention is given to elaborate methods of culture. No effort is made by the selection of superior and accidental varieties by cuttings, grafts, &c., to improve the qualities of the plants, though these methods are practiced by the Chinese in different branches of agriculture and horticulture. The Congou or Souchong trees are generally propagated by cutting the stems and branches of the wild trees and transplanting their roots. This method is quicker and more desirable so long as the stock of wild trees holds out.

The growth of tea is general among the small farmers, many of whom devote the hedge rows and detached corners of ground out of the way of tillage to the growth of tea trees. This renders tea accessible even to the poorer classes. The tea farms of Fo-kien are generally small, consisting of from one to five acres. A nursery is often attached to a plantation, where plants, not over five inches high, are set as closely as possible. In the "Inner range" of the Bohea Mountains are many well-kept plantations, as also on the plains and on hill slopes, capable of being formed into beds, but terracing is too expensive a process, considering the prices obtained by the native grower.

The cultivation of green tea, especially of its finest variety, the Hyson, requires a fertile and well fertilized soil, such as can be found only in the plains. Its higher price in the market will warrant the investment of a greater capital in procuring more fertile land.

The Souchong black tea is confined to a limited range of soil, whereas the Hyson may be grown in almost any tea soil. It is thought that the high-flavored teas will ultimately pass out of the market.

The Hyson shrubs are generally transplanted from their native hills, where they grow wild, into fields, gardens, and hedge rows, a light garden loam being generally considered the most eligible.

Decayed plants are also renewed by seedlings or by transplantations from the hills. The whole seed bed is carefully manured twice a year, in spring and autumn, the ground weeded and turned up four times a year. In about seven years the plants are cut off close to the ground, in order to produce an exuberant growth of succulent leaves. In about 30 years they become entirely worthless, and are then rooted up.

The inferior Hyson tea, called "hill tea," and the common Singlo and Twankay shrubs, are weeded only twice a year.

The seedling plants are transplanted in time to receive the benefit of the warm showers in their new soil in the spring change of monsoons. They are planted in rows about four feet apart. Their thick growth gives them a hedge-like appearance. The premature plucking of the leaves having been found very prejudicial to the health and vigor of the plants, they are allowed at least three years of exemption after transplanting. This enables the shoots and foliage to grow up very strong and thrifty. Even in full bearing the weaker plants are spared a full denudation of their leaves.

The tea plant begins to flower in the south generally about October, the period of efflorescence continuing till March. The early leaf buds in the spring, being covered with white silky down, are gathered to make the tea called Pekoe, a corruption of the Canton word Pa-ko, white down. This first gathering of Pekoe tea commences 15 days after the vernal equinox.

There is no fixed rule, however, regulating this matter. It should be timed so that the flow of sap, caused by the genial rain and sunshine, will best enable the depleted plant to bear the drain upon its vital functions caused by the gathering. This will be just when the vegetative process exhibits its greatest energy. A few days later growth produces what is termed the black-leaved Pekoe. The more fleshy matured leaves, subsequently gathered, furnish the Souchong; the larger and coarser ones, still later, supply the Congou. The last picking is called the Bohea. The period of gathering embraces intervals of ten days each, commencing a fortnight after the vernal equinox, and continuing up to the summer solstice. There is also an autumnal gathering, but of inferior value.

The first gathering is thick, consisting of the convoluted leaf bud, fragrant and of delicious flavor. It lasts from the 5th to the 20th of April. The first gathering of the expanded leaf commences about the last week of April. The subsequent gatherings take place early in June, and just after the summer solstice. The younger leaves are selected. If permitted to attain their full growth they become harsh, fibrous, and brittle. The finest teas are made exclusively from the first gathering.

The process of gathering is one of great nicety and importance. Each leaf is plucked separate, the hands of the gatherer being kept scrupulously clean. In collecting some of the finer sorts, it is stated on good authority, that the gatherer is required to abstain for some weeks previously from gross food lest his breath or perspiration should, in some way, injure the flavor of the leaves. He is required to wear fine gloves while at work, and to bathe regularly two or three times a day.

As before stated, the distinction between black and green teas does not depend upon the organic constitution of the plant, but upon the process of drying. In the case of green teas, this is substantially as follows: When the leaves are gathered they are spread out thinly on flat bamboo trays in order to dry off any superfluous moisture; after remaining an hour or two thus exposed they are thrown by handfuls into roasting pans over a brisk wood fire, and rapidly moved about and shaken up with both hands. They are immediately affected by the heat, giving out a crackling sound and become quite moist and flaccid, discharging a considerable watery vapor.

After being subjected to this process four or five times they are drawn out quickly and placed on the rolling table.

Several men at the table divide the leaves among them, each gathering as many as he can hold together in a ball. This is pressed together and rolled on a rattan table in such a manner as to expel a portion of

the sap and moisture, and at the same time to give the leaves a peculiar twist.

They are then shaken out upon flat trays for a short time, and then replaced in roasting pans over a slow coal fire, being all the time kept in rapid motion with the hand.

Sometimes they are rolled a second time upon the rattan table. In about an hour and a half they are well dried and their green color so fixed that they are in no danger of turning black. Their dull green now becomes brighter. The leaves are then winnowed and separated, according to quality, into different sorts, viz., Twankay, Hyson Skin, Hyson, Young Hyson, Gunpowder, &c. During this selection the leaves are re-fired, the coarser ones once and the finer ones oftener.

By this time the color has come out quite strongly, the finer kind exhibiting a dull bluish-green.

Teas intended for exportation are then subjected to a process of coloring, the account of which will certainly not heighten the relish of European and American consumers for high-colored green teas. The coloring matter consists of three parts of Prussian blue, finely pulverized, and thoroughly mixed with four parts of calcined gypsum. This delectable condiment is applied to the teas during the final process of roasting, and the whole mass rapidly manipulated. The Chinese never use this high-colored tea, and apply the pigment only to meet the whimsical demand of the foreign markets, growing out of singular ignorance of the facts of tea production. The coloring amounts to about half a pound in every hundred.

In the preparation of black tea the leaves, after gathering, are not immediately subjected to the drying operation, but are allowed to lie for a considerable time on the bamboo trays, sometimes till the morning after the gathering. They are then gathered into balls, pressed together, and then separated and thrown up into the air. This is continued until the leaves become soft and flaccid; they are then thrown into heaps, and allowed to lie for about an hour.

By this time the leaves are found to have slightly changed color, and to have become moist and flaccid, emitting an agreeable fragrance. They are then roasted, as in the case of green tea, for five minutes, and rolled upon the rattan table, after which they are spread out thinly upon sieves and exposed to the air upon an elevated bamboo framework. In this condition they remain for about three hours, being frequently stirred and turned. A fine, bright day is especially desirable for this part of the process, after which they are again roasted for a few minutes, and again rolled. The final desiccating process is as follows: A tubular basket, open at both ends and contracted in the middle, is placed over a small charcoal stove. Its narrowed section is intersected by wires, upon which a sieve is placed, covered with tea leaves to the depth of an inch. After five minutes' drying in this position, the sieve is removed and resupplied with leaves. After this drying process they are again rolled, and this alternate drying and rolling is sometimes repeated as often as four times.

The black color is now finely brought out and continues to improve. The final operations, sifting, picking, refining, and sorting, then follow.

In comparing the respective processes of preparing the leaves for green or black tea, it will appear, first, that, in making green tea, the leaves are roasted as soon as possible after gathering; whereas, in the preparation of black tea, they are allowed to remain for some time in heaps in their moist state. During this time they undergo a fermentation, which is assisted by being tossed and manipulated prior to roast-

ing. This roasting is then interrupted, and the leaves exposed to another period of fermentation. By this fermentation some of the organic principles of the tea plant are decomposed by the presence of atmospheric oxygen and changed into an oxidized extractive matter, which sinks to the bottom of the tea-cup upon infusion. The presence of these vegetable principles, unchanged in the green tea, is alleged as a cause of its different effects upon the nervous system, and of the greater amount of nervous excitability in green-tea drinkers. After a careful assortment of the different grades of teas by sifting, each one is packed in chests or boxes, and carried to market, in quantities varying according to the size and productiveness of the plantation. These markets are held at regular periods, as, for example, at Ly Yuen there is a tea market every tenth day of the season, to wit, on the 2d, 12th, and 22d days of one month, and on the 7th, 17th, and 27th days of the month following. The teas collected at these country markets are sent to the village of Sing-Csun, where the hong merchants and tea factors of Canton have large establishments for packing teas for foreign exportation. Here also the Shan-Se merchants and factors procure their teas for the overland trade with Russia. The statements that the better class of teas, either green or black, can be obtained in any local market except the above-mentioned one of Sing-Csun or in the hyson market of Moo-yen and Yun-ning, are emphatically denied by Ball, in his account of the culture and manufacture of tea. A small amount of tea may be obtained in the remote districts, but the chests in which it is packed are of darker color and lack the peculiar style of the markets.

After being packed in chests, the tea is sent to markets in chops or breaks of about 600 chests, each of which contains about 80 pounds of tea. Each chop is divided into two packings of about 300 chests. The teas which are to constitute one uniform quality of 600 chests consist of certain proportions of the three different gatherings of the season, collected from the various farms and localities around, a careful record of each being kept in every farm of each gathering, and these are carefully mixed in one uniform quality. They are packed by men in their bare feet, and must be perfectly dry, or fermentation will take place. In all these stages of tea culture and preparation the Chinese display that careful attention to details and that patient intelligence which have ever characterized the industry of this singular people.

The teas of China, as prepared for exportation, are thus enumerated in Williams's Chinese Commercial Guide. The Congou, a corruption of King-hu, in Amoy dialect, signifying laborer's tea, or tea upon which labor has been bestowed. There are eight varieties of this tea manufactured to supply the foreign demand, each presenting an almost endless diversity of minor differences of quality. The finest kinds are produced in the province of Hupeh, and are divided into three classes, of which the best is the Yang-lin-lung, or Willow Valley; next in quality is the Yang-lin-szi, or Willow Township, and lastly the inferior Hieh-kia-shi, or Hieh family market tea. The Congou from Hupeh is easily distinguished by a large leaf, black, and sometimes purple in color, with a rich deep red infusion and a mellow soft flavor. From its delicate constitution it cannot bear much firing without losing its fragrance, hence it requires careful handling to prevent its becoming musty. The Congou from Honan province has a grayish black color, not strong, and of a flavor somewhat resembling tar, which the Chinese ascribe to the pine wood used for firing. There are three classes of this tea. The Moning Congou

from Moning, in the province of Kiang-si, resembles the foregoing in appearance, but it frequently has an earthy smell and taste, arising from some undetected element in the soil. Its best quality, called Sungiang, or fir-fragrance, has a leaf small, even and black, with a strong but agreeable infusion. The Honan Congou was originally called Bohea in the early trade of the English East India Company. The leaf is dark red, open, and coarse, with an infusion of pale red, deepening as the quality deteriorates. It is brought from the northern declivity of the Bohea Hills. Since the dissolution of the East India Company the Congou tea has, on the whole, been improved; but during the Tai-ping insurrection it declined both in quality and quantity. The best quality of black tea brought to the export trade of Canton is the Kiai-shan; its quality and mode of curing are such that it may be kept for years without injury, in a dry climate. It comes in limited quantities from Shu-fan-kiai, and is distinguished by its small, red, curly leaf, with Pekoe tips. Its infusion is brisk, strong, and richly aromatic. A variety called Hia-mei is rarely to be procured. What little is raised is bought for mixture with other teas to improve their flavor. Its leaf is black and curled. Another variety, the Tsan-tun-kiai, is grown on the Bohea hills; it has the peculiar Ankoy flavor. The leaf is mixed, becoming greenish after infusion. A variety, or rather imitation, of Congou has been made in Kwantung province, called Tai-shan. It has a strong, highly fired, melting taste, and often looks better than the best Nanking teas. Its production, however, is declining. The Souchong has already as many varieties as the Congou. The leaves usually exhibit a reddish tint, the infusion being of the same color but paler. The best comes from Shu-fang-kiai, where the Kiai-shan Congous are grown. Pekoe, collected from the convoluted leaf bud, is the most delicate of the black teas, is of four varieties, its flavor being destroyed by firing. Dampness turns it musty. Caper is from the district of Nanganki, in the province of Fo-kien; it is rolled into small pellets, the leaves being made to adhere by weak rice water. They are red and mingled with dust. The infusion is thin and weak. It is the coarsest of all black teas. Plain orange Pekoe leaf is small, curled, and yellowish, with whitish tips like the Pekoe. This variety is mostly exported to the United States. The Oolong or Black Dragon resemble the Ankoy Souchong in appearance, but is very fragrant, with a pale delicate infusion. The Hung-muey or red plum blossom is now in disrepute, being made only in small quantities, deficient in strength. The best sorts resemble Souchong, and the leaves show downy tips. The foregoing embrace nearly all the black teas brought to the coast for export. The green teas collectively are called Tah-cha and Sung-lo-cha, from the range of hills bearing the latter name. They are divided into three classes, called, from the different sections of country producing them, Wa-yuem, Ping-shin, and Twanki. Teas from these localities are all of superior quality, each furnishing six subordinate classifications, viz.: Hyson, Young Hyson, Hyson Skin, Twankay, Imperial, and Gunpowder. These are separated from each other by winnowing, sifting, and garbling, by hand.

Young Hyson, once called Uchain, was formerly the finest kind of green tea, and very little of it was accessible in the market. Its name is derived from Yu-tsien, (before the rains,) because it was picked when the leaves first unfolded. Though deteriorated, it is still the most important of green teas, and extensively imitated in Kwang-tung province, and not unfrequently adulterated with spurious leaves.

Hyson, from Hi-chin, or vigorous spring, is also called Ching-ha, or true tea. It has a well-matured leaf, curled and twisted, of a light-green

color, sometimes glazed; the natural color is pale yellow, inclining to green, and the infusion of a pale straw color, deepening as the quality deteriorates.

Hyson Skin is the refuse of the green teas, with a large, uneven, twisted and knobby leaf, and a decoction like that of other green teas of the same quality; very little is now made. Twankay is designated from the river Twan, in the district of Taiping, in Naganhwain. The leaf is curled, open, and bright, resembling Hyson; some chops of this tea are really good Hyson. Imperial and Gunpowder are not Chinese designations. The first is called by them Yuen-chu, a round pearl; the latter Chi-chu, or sesamum pearl, from the round leaves.

The foregoing classes of teas, both green and black, are extensively imitated by what are called the Canton teas. The green imitations are highly colored with the Prussian blue and gypsum before mentioned, and glazed. They are also highly scented. Scenting teas is practiced mostly for the foreign market, such being seldom used by the Chinese themselves, believing that it is only the inferior sorts that require any such manipulation. Foreigners who have used the finer sorts of unscented tea agree with the Chinese in this opinion. Yet there are several kinds of scented tea which bear a high price and of really excellent quality. Scenting, however, is generally used to give to common teas a flavor, assimilating them to the finer varieties; hence to the Chinese themselves it is suspicious.

The green teas are generally scented by mixing them in layers, hot from their last roasting, with layers of odoriferous flowers and inclosing both for 24 hours in tea-chests. Black teas are sprinkled with flowers, which have sometimes been dried, prior to the last two roastings, which operate upon the scenting flowers as well as the tea. For the overland trade with Western Asia and Russia a kind of tea, called brick or tile tea, is prepared. It consists of masses of leaves compressed into cubes, the cohesive principle being the serum from the blood of animals. The tendency of the tea leaves to agglutinate by means of their expressed viscid juices would seem to render unnecessary any such artificial cohesive principle, inasmuch as it requires to be constantly resisted by repeated drying and handling, in the preparation of tea for export by sea. The kind of tea used is generally very inferior, classed with the common Bohea, a term which formerly embraced all black teas, but now indicates only the coarser descriptions imported into Europe from the Bohea Hills. Prior to the introduction of the processes of manufacture on the field of production, the Bohea teas were often fermented and spoiled on the way to Canton. These spoiled leaves were used for the manufacture of brick tea for the poorer classes and for the Tartars of the outlying provinces of the Empire. The coarser kinds of Bohea are now generally used for this purpose, and such being deficient in gluten, it has been found necessary to supply an artificial cohesive principal. The bulk of this brick tea is produced in Se-chuen, a province bordering on Thibet.

The accounts given of the introduction of tea to the civilized nations of Europe, as might be expected, are somewhat variant. Letsom, in his "Natural History of the Tea Plant," published in 1799, says that, about the year 1600, Texeira, a Spaniard, saw dried tea leaves in Malacca, and was informed that the Chinese made them into a beverage. In 1633 Olearius found tea-drinking generally prevalent in Persia, whither, under the name of Cha-orchia, it had been imported from China by the caravans of the Usbeck Tartars. In 1639 Starkaw, the Russian ambassador at the court of the Great Mogul, Chan Altyn, partook of it, but failed

to appreciate its attractions, refusing a present of several pounds to his imperial master, the Czar Michael Romanoff. It was introduced into Europe early in the seventeenth century by the Dutch East India Company. In 1666 it is said to have been brought to England from Holland by Lords Arlington and Ossory, though there is evidence of its having been used somewhat generally before that time. In Pepy's Diary, September 25, 1661, he says: "I sent for a cup of tea, (a Chinese drink,) of which I never drunk before." In 1664 the English East India Company brought two pounds two ounces as a present to the King, and in 1667 issued their first order to their agent at Bantam to send 100 pounds of the best tea he could get. In 1678 Dr. Cornelius Bontekoe, a Dutch physician, published a treatise recommending the general use of tea. It is likely the Dutch got their tea from Japan.

Tea was sold in London up to 1707 at 60 shillings per pound, though it cost no more than 2s. 6d. or 3s. 6d. at Batavia, in Java. In 1689, instead of taxing the decoction in the shops, Parliament levied a duty of 5 shillings per pound upon the imported leaf. In 1790 the amount of tea imported into Great Britain and Ireland was 1,645,095 pounds, worth £580,362. The East India Company monopolized the import trade up to 1833, when it was thrown open to general enterprise. In 1715 green tea was very generally used, and prices fell, with an enormously increased importation. The extension of the tea trade of China presents one of the most singular and important themes for the study of the social economist. From the tables of Letsom, reported on the authority of Sir George Staunton, it is seen that during the 20 years closing with 1795 the Chinese tea export rose from 16,243,915 pounds to 29,303,010 pounds; transported in 35 ships, of which 21 were English. The American carrying trade rose from 2 ships and 880,100 pounds in 1785 to 7 ships and 1,974,130 pounds in 1794. MacCullough, in his "Cyclopedia of Commerce," places the figures of the American carrying trade much higher, rising from 3,047,292 pounds in 1790, to 7,839,457 pounds in 1810. According to his estimates our average consumption of Chinese tea in the United States from 1801 to 1812 was 3,350,000 pounds per annum; from 1813 to 1820 the average consumption, as shown by the difference between the imports and exports, was 3,339,740 pounds per annum. The total import rose from 4,975,646 pounds in 1821 to 20,006,595 pounds in 1840, the exports for those years being 531,691 pounds and 3,123,496 pounds respectively.

The American carrying trade with China showed a considerable decline from 1833 to 1841, the tonnage of the former year being 15,334, and of the latter, 11,986. The value of the tea cargoes fell from \$5,484,603 to \$3,466,245. In 1853, however, this trade rose to its maximum, presenting an aggregate tonnage of 92,864, and a value of tea cargoes amounting to \$8,174,670. The total value of our imports from China during that year was \$10,537,710. The statistics of later years are not at hand, but the general increase of our tea trade is a well-known fact.

The civilized world having settled in its habits of life upon an enormous consumption of this beverage, it has become a question whether its production shall continue to be monopolized by the countries of Eastern Asia. Efforts have been made during many years to naturalize the tea industry in this country. From present indications the difficulties to be overcome mainly result from the higher price of labor. The immense amount of labor involved in this gathering and preparation of the tea leaves for market may be partially appreciated from the foregoing sketch of tea production in India and China. The immigration of Chinese laborers into the United States is looked upon by many

as solving this difficulty, by the introduction of free labor. Against every influence of this character, however, which tends to cripple the condition of the native laborer, and thus to render him the mere tool of capital, all the instincts of our democratic civilization seem to revolt. It is to be hoped that the Chinese, in entering upon the great race of competition in our labor market, may see proper to rise in his demands, and to assume the full claims of, independent manhood. The addition of a new branch to our varied industry would be dearly purchased by any sacrifice of the principles of a social equality or by the introduction of social caste, which would inevitably follow any degradation of labor. Tea culture has been introduced as an experiment into several of our Southern States, and also into California. Mr. James Campbell, residing some ten miles east of Knoxville, Tennessee, is reported as having a considerable number of plants in a flourishing condition, the remnant of a plantation commenced before the war. Though neglected during the convulsions of our late struggle they are now doing well. In a letter to this office, dated March 3, 1870, Mr. Campbell expressed himself in very sanguine terms as to the result of this experiment. He suggests that the scope of country, embracing North Carolina, Tennessee, Arkansas, and the western slope of the Rocky Mountains, would be well adapted to tea culture. In this opinion he seems to be supported by the facts previously sketched in this article. The limits he has indicated do not differ in general climatic and chorographic characters from the tea region of China. The absence of the monsoons, and the fierce extremes of temperature which result from this alternate activity, represents the main difference between the Asiatic and the North American tea region indicated. Mr. Campbell's plants were obtained nearly eleven years ago, were about one year old at the period of transplanting, and were set out in a rich gravelly loam, where they have never been disturbed.

A number of experiments in tea culture of late origin, in different parts of this country, are reported as promising good results. The most prominent and successful of these enterprises, however, is reported by Sherman Day, esq., surveyor general of California. In El Dorado County in that State, about a half a mile northeast of Gold Hill, a small mining town, and about half way between the larger towns of Placerville and Coloma, Mr. J. H. Schnell, a German gentleman, who had resided some ten years in Japan as an attaché of the German legation, has commenced the cultivation of the tea plant. Mr. Schnell has brought with him his Japanese wife and a number of Japanese laborers, familiar with the tea culture in their native land.

The locality of this experiment is the foot-hills of the mining region, rising in successive benches toward the foot of the Sierra. It is 2,400 feet above the sea, 600 feet above the level of the American River, and just below the first heavy-timbered belt of the mountains. The surface of Schnell's tea farm is gently rolling, drained by a few shallow ravines, with a light brown gravelly soil made up of the wash and decomposed elements of a granitic formation, and resting at a few feet below upon a bed-rock of rotten granite. Black and white oak of various species grow in scattered groups in the knolls. The soil is not red like that around Placerville, but is very productive of grasses and farm crops generally. The region abounds in luxuriant vineyards, orchards, and gardens. The South Fork Canal, a large mining ditch, sends a branch near the grounds, furnishing water for irrigation at very cheap rates. Mr. Schnell has 120 acres inclosed land out in vineyard, orchard, and garden, besides tea land and farming land. He has set out 400,000 tea plants

which he brought with him from Japan. These are planted in small hills or groups, containing five plants each, which it is intended to have grow up into one bush. Many of the plants perished from drought, no resort having been had to artificial irrigation.

It is found that young trees of all kinds in that region require irrigation in the first and second years of their growth, but that subsequently they get along very well without it. Some of the dried-up plants are, under the operation of irrigation, now sending up fresh shoots of vegetation. These are also protected by pine boughs. The leaves and stalks have a very healthy appearance. Of these Mr. Schnell will soon have several hundred thousand, enabling him to furnish the neighboring cultivators with the means of testing the tea culture on a great variety of soils.

The great amount of oil in the tea seeds renders them particularly liable to decay. Hence he expects that not more than 25 or 30 per cent. of the seed planted, as a general thing, will come up. He hopes to organize a paying business in supplying the neighboring farmers with healthy seeds. He states that even in the tea districts of Japan there are very few agriculturists who devote themselves exclusively to the tea culture. It is generally confined to nooks and corners of land that cannot be very easily used in any other branch of agriculture. The leaves are generally sold to the operators skilled in the drying and packing processes. Mr. Schnell is not satisfied that the soil upon which his experiment has been inaugurated is the best in the neighborhood. He supposes, however, that well-drained, loose, gravelly soils are preferable for tea culture. By the enlargement of his operations from year to year it will not be difficult for him to obtain an aggregate of a million of plants, each averaging about a pound of good tea per annum. There are three pluckings in the season, in March, June, and August, the first of which is the best, yielding the high-priced Imperial tea. The plants will bear cropping seven years, and then may be cut down to give the roots a chance for fresh sprouting. The same root may thus be serviceable from thirty to forty years. The plant will grow to the height of eighteen or twenty feet, if permitted, but for facility in gathering leaves it should be restrained to a height of four or five feet. It is an evergreen and presents an aspect of beauty the year round.

The indications, observed both in the older system of culture in Oriental Asia and in the experiment in this country, go to show that this business may be profitably pursued as a supplement to other agricultural enterprises; each farmer may raise enough for his domestic consumption, for ten or twelve trees will furnish enough tea to meet the wants of an ordinary family.

The question of competing with China and Japan in the markets of the world by the production of tea, is of course problematic. We have not yet seen enough of our tea production to judge of its ultimate capacity. But when it is thus made a matter of domestic industry on every farm, the aggregate results cannot fail to be very considerable. The price of labor, the continuance of tariff duties, and the decreasing cost of transportation are all to be taken into consideration in estimating the efficiency of our tea industry as a separate branch of agriculture, but the labor necessary to cultivate a few tea plants will only absorb the odds and ends of a farmer's time, which might otherwise go to waste. The feasibility of growing tea seems to be sufficiently settled in the United States. In different portions of the country the healthy and promising growth of plants has been secured. We may expect that by

degrees this important industry will be established, adding to the wealth and natural resources of the American people.

Respectfully submitted.

JOS. S. WILSON,
Commissioner General Land Office.

The Honorable SECRETARY OF THE INTERIOR.

OUTLINE OF THE PROGRESS OF SILK CULTURE.—PORTIONS OF THE PUBLIC DOMAIN ADAPTED TO THIS INDUSTRY.

PAPER ACCOMPANYING REPORT FOR THE YEAR 1870 OF THE COMMISSIONER OF THE GENERAL LAND OFFICE.

This branch of industry, now rising into prominence among the interests of nations, is one of great antiquity. From all that can be gathered it appears to have arisen in China, long before the Christian era. It formed a staple of export to the Roman Empire, and was an article of luxury, against which Pliny complained as one of the causes of that immense drain of the precious metals, constituting one of the most perplexing problems of the science of finance. The Chinese annals attribute to the Emperor Fau Hi the employment of silk in the manufacture of musical instruments, 3,400 years anterior to the Christian era. The Empress Si-Ling-Chi was said to have invented the fabrication of silk 2,650 years before our era, an invention the beneficent effect of which upon the prosperity of China has caused her apotheosis. Divine honors are now paid to her under the expressive name of "Sien Thsan," or the "First promoter of silk industry."

As it is the habit of the Chinese Emperor once a year to plow the earth in order to invest agriculture with royal dignity, so the Empress annually visits the silk-worm nurseries, and encourages the production of this valuable commodity by her personal labors. It has been fostered also by still more substantial tokens of imperial favor, and has become one of the leading industries of the Empire. Two centuries prior to the Christian era, the Chinese carried on a commerce with Persia, Greece, and Italy, in which silk occupied a prominent place. The route of transmission was protected by military colonies against the marauding tribes on the borders of the Empire, but the exportation of eggs of silk-worms and the impartation of knowledge of the process of culture was forbidden under penalty of death.

The secret, however, was discovered, and the Chinese monopoly broken up in the sixth century of the Christian era. Two Persian monks, who acted as missionaries in the Celestial Empire, stimulated by the gifts and promises of the Roman Emperor, Justinian, in the year 552 A. D., succeeded in conveying in hollow canes a number of silk-worm eggs to Constantinople. These eggs were hatched, and this constituted the beginning of the silk culture of Europe. It spread, however, very slowly. Several silk manufactories arose in Athens, Thebes, and Corinth for the rearing of the worms and for the manufacture of the silk into fibers and fabrics. The Venetians imported these Greek fabrics into Western Europe, and drove a thriving trade in silk goods.

The Moors imported the silk culture and manufacture into Cordova, Murcia, and Granada in Spain, about the year 910 A. D. In the year

1130 A. D., Roger, second King of Sicily, erected a silk manufactory at Palermo, and another in Calabria, there setting to work artisans whom he had taken captive during his expedition to the Holy Land.

In the fifteenth and sixteenth centuries this industry had been domesticated in France, but it was not till 1564 that the production of the raw material had been fully established. During that year, Traucat, a gardener, succeeded in forming a nursery of white mulberry trees (*Morus alba*) at Nismes. In a few years the culture and manufacture of silk had spread over the southern provinces of France. Prior to this some French noblemen, returning from the conquest of Naples, brought back to Dauphine a few silk-worms, and some mulberry saplings, which they planted, and of which they endeavored to establish the culture. This aristocratic experiment, however, not being made with practical intelligence, entirely failed. Under Henry IV, the silk culture and manufacture of France greatly prospered, being encouraged by the liberal and munificent patronage of the Duke of Sully, the prime minister, who established a nursery of silk-worms in the gardens of the Tuileries. The production of both fiber and fabric had largely increased in France, especially among the Huguenot population. The insane bigotry of Louis XIV, as exhibited in the revocation of the Edict of Nantes, drove this splendid industry into neighboring and rival countries, raising up a destructive competition to the French monopoly. In spite of unfavorable climatic conditions in England, the culture and manufacture of silk, first encouraged by James I, became successful. The importation of raw material from other countries formed the basis of an extensive manufacturing industry.

In 1629 the silk throwsters of London formed themselves into a corporation, which as early as 1661 embraced 40,000 persons. The revocation of the Edict of Nantes, in 1685, contributed to the enlargement of the English silk trade, by the settlement of a large colony of French Huguenot silk weavers of superior skill at Spitalfields. The silk throwing mill at Derby in 1719 served to extend this industry, and in 1730 English silks successfully invaded the markets of Italy, bringing higher prices than the Italian silks. The silk industry has also had a great expansion in Holland, Belgium, Switzerland, and Germany.

The introduction of silk culture into America was almost coeval with its first settlement by the English. In the early period of Virginia colonization, James I strongly urged upon the London Company energetic measures for the cultivation of the mulberry. In a characteristic letter to the company, he enjoins upon the members diligent application to the culture of silk in all its branches, rather than to the growth of tobacco, against which he published his celebrated "counterblast." The members of the company addressed themselves to the enterprise so strongly recommended by the King, but its speedy dissolution prevented any very effective action. In 1651, however, during the commonwealth, the culture of the mulberry was resumed in Virginia, that tree having been found to be indigenous. In 1660 a coronation robe, woven from silk spun by Virginia silk-worms, was worn by Charles II. The superior profits of tobacco culture, however, interfered with the silk culture, which disappeared from that State before the close of the eighteenth century.

Efforts were made to introduce silk culture into all the American colonies. In 1718 the Spaniards introduced it into Louisiana. Its inauguration in Georgia was an object of strenuous exertion both on the part of the colonists and of the Imperial Parliament. Private donations and public subsidies of land were devised for the purpose. In 1732 a

number of skilled artisans were sent over from Europe, but the treacherous person in charge of the party destroyed the machinery, eggs, and trees, and then fled the country. An Italian masterworkman was secured, who proved more trustworthy. Under his management this beautiful industry began to flourish. In 1735 a splendid robe of Georgia silk was made in England, and subsequently worn by Queen Caroline on great state occasions. In 1740 1,000 pounds of cocoons were exported, realizing high prices. A large silk establishment was erected at Savannah, which, in 1758, absorbed 10,000 pounds of cocoons, an aggregate which, in 1766, had enlarged to 20,000. During this period the annual export of raw silk ranged from 500 to 1,000 pounds. These were the halcyon days of silk culture.

The withdrawal of government bounties in the last-named year caused an immediate decline in production, which, during the Revolutionary War, entirely ceased. The attention of the planters after the war being directed exclusively to cotton-raising, the silk culture was never revived.

In South Carolina this interest had some prosperity in the ante-revolutionary times. The mother of the celebrated Pinckneys sent some raw silk produced on her plantation to England, where it was woven into tissues. Gowns made of it were presented to the mother of George III and to the Earl of Chesterfield; but, under the operation of the same causes which prostrated the Georgia business, the South Carolina silk culture disappeared.

Silk culture was also encouraged by parliamentary bounties in Pennsylvania and New Jersey. In 1770 Dr. Franklin sent home from Europe mulberry cuttings, silk-worms, and eggs. The following year a silk establishment was set up in Philadelphia, which, for several years, worked up large quantities of cocoons. A lady of Lancaster County raised cocoons from which a piece of silk of fifty yards was fabricated, and of this a court dress was sent to the Queen, who acknowledged the donation by a handsome present to the fair donor.

New Jersey also raised groves of mulberry trees and produced cocoons of good quality in considerable quantities, as did also Massachusetts and Connecticut. In 1747 Governor Law appeared in silk coat and stockings of home production, and a few years later President Stiles, of Yale College, appeared at commencement in flowing robes of Connecticut silk. In 1770 Boston and New Haven contended for the supremacy in the silk trade. A flourishing manufactory was in operation at Mansfield, Connecticut, and others at Ipswich, Massachusetts; while Northampton was noted for the extent of its mulberry groves and nurseries. But all these enterprises gave way before the same causes which had ruined silk culture in the Southern States. At the opening of the present century scarce a vestige of this once-promising industry remained. Though silk culture has not witnessed any general revivals, yet in certain localities it seems to have been prosecuted to some extent. Mansfield, Connecticut, produced in 1839 about five tons of raw silk. At Washington, Pennsylvania, it has maintained itself continuously. It was introduced into the New York State Prison at Auburn in 1841, and the first year produced \$13,000 worth of sewing silk. It seemed to be gradually gaining in the country, when, about twenty-five years ago, the explosion of the *Morus multicaulis* speculation again prostrated it. Since that time it has been slowly recovering from that reaction.

In 1840 the silk crop of the United States was estimated at 60,000 pounds, worth about \$250,000. In 1844 it had increased to 400,000 pounds.

worth about \$1,500,000; by the census of 1850 it had fallen to 14,763 pounds. The census of 1860 exhibited a still smaller aggregate, viz., 11,944 pounds, but the manufacture of sewing silk in Connecticut, New Jersey, Massachusetts, Pennsylvania, and New York showed a marked increase. The annual product of raw and manufactured silk in those States was set down at \$5,000,000. Ribbons and small stuffs exhibited a very considerable enlargement. Since that time the business has made steady progress.

As a nation we have special advantages in the prosecution of this great industry. The ante-revolutionary experiments demonstrated the physical capacity of the Atlantic slope from Massachusetts to Georgia for this culture. Other and more profitable investments of capital and labor absorbed the productive enterprise of this portion of our country, but we have reason to believe that the time has come when the silk culture may be recommenced with every prospect of profitable results. The Middle and Western States of our Union promise equal returns to this beautiful industry.

But the Pacific slope seems to combine all the higher requisites of success. The soil of this region is admirably adapted to the white mulberry, (*Morus alba*), which is propagated with little effort, and grows with great luxuriance and of exquisite quality. The climate of California, however, is the distinguishing element of its silk production. According to an intelligent gentleman largely interested in the silk culture on the Pacific coast, the rain and damp of European climates destroy a large proportion of the grubs, while from this cause and from the presence of explosive electricity from 25 to 75 per cent. of the silk-worms perish. Under the dry, elastic skies of California this waste is entirely avoided. Here is an advantage greatly compensating the higher prices of labor in this country. At the Paris Exposition of 1867 the finest cocoons in the entire concourse were from California.

The Pacific silk culture enjoys special advantage in its exemption from the necessity of artificial heat to hatch the eggs of the silk-worm. To transfer them from the cellar and expose them to the sun's rays is amply sufficient. The baking process, which is so apt to dim the luster of the silk, is also an evil to which the California silk-grower is not subjected. The eggs produced in this genial climate are also in great demand in foreign countries. They are exported to points along the entire Pacific coast of North and South America, and even to China, Japan, and Europe. The capital already invested is large. The most extensive cocooneries are in the neighborhood of Santa Barbara. One large enterprise in that locality was started a few years ago with the planting of 10,000 mulberry trees, and in 1867 produced upward of 300,000 cocoons of very superior character and market value. It is found that many of the localities of that State—unsuitable for cultivation—will yield special facilities for silk culture. The foot-hills and plains along the western base of the Sierra Nevada will yet, it is very probable, become as noted for magnificent silk as the gorges of that mountain range have been for the production of the precious metals, or its intervening valley for stupendous crops of cereals.

The progress of silk culture in California has been hampered by a lack of proper understanding of its processes. The silk-worm is a delicate animal, requiring close attention to the conditions essential to its growth and health. The year 1869 witnessed a great drawback to the silk business from unskillful operations. In the fall of 1868 it was estimated that there were in the State 1,000,000 live cocoons, and that these produced butterflies which laid 100,000,000 eggs. Many silk-growers

placed their eggs in ice boxes, and consequently lost them. The growth of mulberry trees had not been secured commensurate with such demand upon them, and the supply of food for the worms was not forthcoming.

Until this preliminary requisite of success is fully secured, it will be necessary to export a large proportion of the eggs produced; but a large and increasing export trade is reported. California eggs have attained a high reputation in Europe, and especially in France, producing worms which are exempt from most of the diseases which destroy so large a proportion of the worms of those regions.

The light of increasing experience cannot fail to remove many of the hindrances to the industry in this State and to extend it to the entire Pacific slope. The profits to be derived from an intelligent pursuit of the silk business in all its branches have, as yet, been very imperfectly indicated. The difficulty of feeding worms, resulting from the backward growth of the mulberry, is necessarily but temporary, and decreases with each year. Immense nurseries have already been established, from which orchards are constantly being set out. From a number of authentic cases reported, the experience of Mr. J. N. Hoag may be selected as illustrating the results of the application of practical intelligence to this business with a small outlay of capital. In 1868 he fed the leaves of *Morus multicaulis* trees, covering three and a half acres, to silkworms, commencing June 1, and closing July 25. As the product of this feeding he sold 486 ounces and 13½ pennyweights of eggs, at \$4 per ounce, amounting to \$1,946 70. He retained for himself and friends eggs valued at \$1,897 50, and sold perforated cocoons worth \$75 30, making a total receipt of \$3,922. From this, deducting \$472 for labor and other expenses, he found he had cleared \$1,000 per acre with but 60 days' work.

But the production of eggs is by no means the principal source of profit in the silk business. In its present preliminary of course it will absorb the bulk of the capital and labor available for the enterprise, but when this industry shall have developed its full proportions, it is beyond doubt that the egg trade will be but a subordinate pursuit. Yet it is capable of immense expansion. By the system of dwarfing the trees it is possible to obtain double the amount of foliage that can be secured under the orchard system. Two crops of leaves per acre, weighing 64,000 pounds, may be raised, which, at the rate of 100 pounds of reeled silk, give 640 pounds of silk as the produce of a single acre. Even the poorer quality of reeled silk is worth \$7 per pound, while that produced in California from the tri-voltine Japanese worms sells in San Francisco market at \$9 per pound. But taking the lower prices as the average, and the gross product of reeled silk per acre is not less than \$4,480. The gross expenses of the operation are estimated at \$2,140, showing a net profit of \$2,340 per acre by combining the egg business with the reeling of silk.

The fabrication of silk properly belongs to manufacturing; and not to agricultural industry. This business is, of course, in its infancy on the Pacific coast, yet some very promising enterprises have been started. A company at San José has erected an establishment intended to embrace some 40 looms. The stock has also been subscribed for another establishment of similar character at San Francisco. The census of 1860 returned in the United States 95 establishments for the manufacture of silk and fancy goods, fringes and trimmings; that is, all kinds of silk fabrics, while the establishments for the preparation of the fiber in the form of thread and twist numbered 42; total, 137. The entire capital

invested in silk manufacture was \$2,938,680, consuming \$3,906,290 worth of raw material, paying \$1,035,308 for the labor of 1,523 male and 3,837 female operatives, and producing an annual value of \$6,589,171. The net profit amounted to \$2,647,573, or over 90 per cent. on the capital invested. The returns of the census of 1870 are not yet sufficiently embodied to admit of a comparison. It is evident, however, that this manufacturing interest has enlarged in its value and proportions during the decade just closing. When we observe that the people of the United States import annually over \$30,000,000 worth of silk goods, the scope of expansion of the silk enterprise is enormous.

The observations of scientific silk culturists in France and Italy have developed some very clear generalizations illustrating the capacity of different parts of a country to produce mulberry trees and silk-worms.

First. The culture of the mulberry tree and the breeding of silk-worms is possible up to a very high northern limit, fixed by the frequent recurrence of the temperature of 77° F.

Second. The limit of the mulberry is about the same as that of the grape. The climatic conditions essential to the success of either is about the same.

Third. The mulberry is successfully raised in Europe, and may be in America, on the sides of mountains, up to an elevation the mean annual temperature of which is 49° F.

Fourth. Damp or stormy climates are unfit for the breeding of the silk-worm.

Fifth. Malarial exhalations from swamps or marshes are injurious to the health of silk-worms.

Sixth. This industry is generally more successful when pursued in connection with other enterprises than when pursued independently. Under these conditions it is believed that a very large portion of the public lands of the United States is suited to the silk industry. It is thus presented as one of the elements of wealth leading to an early settlement of the public domain.

Respectfully submitted.

JOS. S. WILSON,

Commissioner of the General Land Office.

The Honorable SECRETARY OF THE INTERIOR.

Instructions to United States registers and receivers and surveyors general in relation to the survey and entry of mining claims under the provisions of the act of Congress approved July 26, 1866, "granting the right of way to ditch and canal owners over the public lands, and for other purposes," and the act amendatory thereof, approved July 9, 1870.

DEPARTMENT OF THE INTERIOR,

General Land Office, August 8, 1870.

GENTLEMEN: The original mining act of July 26, 1866, (14 U. S. Stat., p. 251,) having been amended in adding to its provisions additional sections 12 to 17, inclusive, by the act of Congress approved July 9, 1870, it becomes my duty to prescribe, for your information and observance, the following regulations, to wit:

1. By the twelfth section of the amendatory act, *placer* claims, including *all forms of deposit*, excepting veins of quartz or other rock in place, are made subject to entry and patent under similar circumstances,

conditions, and like proceedings as contemplated in the original act for vein or lode claims.

Placer claims on surveyed lands are authorized to be entered by legal subdivisions, no special survey or plat in such case being required, at the rate of \$2 50 per acre. In regard to placer claims, however, the amendatory law restricts their extent in respect to locations made *after the date of its passage* to not exceeding one hundred and sixty acres for any one person or association of persons, such location being required to conform to the government surveys and not to interfere with any *bona fide* preëmption or homestead claims upon agricultural lands.

2. The act further provides for the subdivision of forty-acre legal subdivisions *into ten-acre tracts*, and authorizes two or more persons, or association of persons, having contiguous claims of any size, although less than ten acres each, to make joint entry of such minor subdivisions, all *bona fide* preëmption or homestead claims upon agricultural lands being protected by law. The surveyors general are, therefore, hereby authorized to have such subdivisions into ten-acre tracts made by their deputies when applied for by claimants, numbering each ten-acre tract with consecutive numbers of claims in the township, as in the case of other mineral surveys; and if the service is performed by *county and local* surveyors, as authorized by the sixteenth section of the amendatory act, it will be the duty of the surveyor general to *verify the surveys so executed*, and, if found correctly done, to adopt the same and certify the fact, appending his approval as in cases where surveys are made under his own direction. The expense of such subdividing is required to be defrayed by the mining claimants.

3. In the thirteenth section it is declared that in the absence of any adverse claim where said person or association, they and their grantors, shall have held and worked their said claims for a period equal to the time prescribed by the statute of limitations for mining claims of the State or Territory where the same may be situated, evidence of such possession and working of the claims for such period shall be sufficient to establish a right to a patent thereto, subject to any lien which may have attached to such claim prior to the issue of said patent.

The foregoing provision is construed to apply as well to *lode* as to *placer* claims, and should lessen the amount of proof usually required to establish a right to a patent.

4. In the fourteenth section it is provided that all *ex parte* affidavits required under the original and amendatory acts may be verified before any officer authorized to administer oaths within the land district in which the claims are situated.

5. By the fifteenth section it is declared that registers and receivers are entitled to the same fees for services in mining cases as are provided by law for like services under other acts of Congress, the rates of allowance being specifically given in our circular dated July 25, 1870.

6. By the sixteenth section the interdict placed by the act of March 3, 1853, "that none other than township lines shall be surveyed where the lands are mineral," is repealed, this provision of law being referable to surveys in *California only*; the extension of the lines of future surveys over the lands mentioned in this section applies exclusively to that State. The requirement, however, in the last proviso of the same section, "that nothing herein contained shall require the survey of waste or useless lands," is a principle of *general application*, and surveyors general will refrain from extending the lines of public surveys over such waste lands which are considered to be those covered by alkali to a depth calculated to prevent the growing of crops, moving sand, or other sandy

plains of great extent, and abrupt or snowy mountains not known to contain mineral deposits.

7. Section seventeen authorizes the extension of the rights conferred by sections 5, 8, and 9 of the original mining act to all public lands affected by this law, and subjects all patents granted or preëmptions or homesteads allowed, to any vested or accrued water rights, or rights to ditches and reservoirs used in connection with such water rights as may have been acquired under, or recognized by, the said ninth section, said section declaring further that nothing in the act shall be construed to repeal, or in any way affect, the act granting the right of way and other privileges to aid in the construction of a draining and exploring tunnel to the Comstock lode in the State of Nevada, approved July 25, 1866, (14 U. S. Stat., p. 242.)

8. The per diem allowance to deputy surveyors, including all expenses of assistants for surveys of mineral claims, as stipulated in our circular letter of January 14, 1867, has been in several cases found quite inadequate, and that, consequently, parties, in order to induce deputies to make the surveys, have found it necessary to pay additional sums as on private account. To avoid such results the surveyors general are hereby authorized to increase the maximum per diem allowance according to the difficulty of the service, taking care, however, to have the work performed on the most economical scale by skillful and responsible surveyors, and in no case to exceed a maximum of \$20 per day.

In each case where an allowance is made of over \$10 per day, the reasons showing the necessity for doing so must be stated in the contract and then reported to this office, and it must be understood that no extra compensation, under any circumstances whatever, is to be exacted or received by the deputy, under penalty of forfeiting the contract and exclusion from the public surveying service.

SPECIAL INSTRUCTIONS RELATIVE TO OBTAINING PATENTS FOR MINING CLAIMS.

With reference to the proceedings necessary to obtain patents for lode and placer claims under the provisions of the acts of Congress above mentioned, the following is communicated :

9. The mining enactments limit the right to apply for and receive patents for mining claims to claimants—

First. Who have occupied and improved their claims according to the local customs or rules of miners ; or,

Second. Who have, by themselves or their grantors, held and worked their claims for a period equal to the time prescribed by the statute of limitations for mining claims of the State or Territory where the same may be situated.

Third. Who have expended in actual labor and improvements upon their respective claims an amount of *not less than one thousand dollars* ; and,

Fourth. In regard to whose possession there is no controversy or opposing claim.

Unless, therefore, applicants for mining patents are properly within these requirements they are not in a condition to avail themselves of the privileges extended by the laws referred to.

THE APPLICATION.

10. This must be in writing, and must be filed in the office of the register and receiver of the land district in which the claim lies. It

must distinctly state the name of the applicant, and whether the claim is applied for by an individual, an association, or an incorporation; the name and extent of the claim; the character of the ore; the mining district, county, and State; the date of its original location according to the mining customs; where the same was recorded; whether the applicant claims as a locator or purchaser; give a description of the premises claimed, and the nature of the improvements made or labor performed; and finally the application should state that the claimant has posted a "*diagram*" of the claim in a conspicuous place thereon, together with notice of his intention to apply for a patent, giving the date of such posting.

11. With the above application the claimant must file a copy of the "*diagram*" posted on the claim, which diagram must represent the boundaries of the premises, as fixed by the local laws, customs, or rules of miners; and when the claim lies upon surveyed land, it must also show its relation to the public surveys.

12. Diagrams of PLACER claims upon SURVEYED lands must represent the *subdivision* of the public lands which the claimant desires to enter, as the act requires such entries, in their exterior limits, to conform to such legal subdivisions.

13. With said diagram must be filed a copy of the "*notice*" posted upon the claim.

This should state the name of the claimant, describe the claim, give the names of adjoining claims, or, if none adjoin, the names of the nearest claims; state whether it is a placer or rock claim; if the former, the approximate area; if the latter, the estimated extent of surface ground, and the number of feet claimed on the course of the vein, distinctly stating the name of the lode and the character of the vein exposed; the mining district, county, and State in which it lies; whether upon surveyed or unsurveyed lands; if the former, in what section, township, and range; if the latter, the location of the claim relatively to some well-known natural object or land-mark in the vicinity, and finally the notice should state that it is the intention of the claimants to apply for a patent for the premises therein designated, and upon which it is posted.

14. There should also be filed with the application satisfactory evidence that the applicant has the possessory right to the claim, agreeably to the local laws or customs of miners. This should consist of a certified copy of the laws or customs of the miners of the district in force at the date of the location of the claim, and of a certificate, under seal, of the county or mining recorder, giving a copy of the record of the original location of the claim, with name or names of the locators, and if the applicant claims as a purchaser, an abstract of title should be filed, tracing the right of possession from the original locators to the applicant for patent. Where applicants furnish satisfactory evidence that they and their grantors have held and worked their claims for a period equal to the time prescribed by the statute of limitations of mining claims of the State or Territory where the same may be situated, such evidence being sufficient to establish a right to a patent for a claim so held and worked, upon compliance with the other provisions of the law and instructions, the proofs enumerated under this subdivision (14) of the instructions are not required.

15. Proof of citizenship is required. Where the applicant is a corporation, a copy of their charter or certificate of incorporation may be filed in lieu of evidence of citizenship. In case, however, the applicant is an individual or an association of persons unincorporated, affidavits of

citizenship, or of having filed declarations of intention to become citizens, should be filed.

16. Upon filing these papers, the register and receiver will give the same careful examination, and if found to be regular the register will order the publication of the "*notice*" for ninety days in a newspaper published nearest the location of the claim; but before ordering such publication, the register will, in future, require the claimant to enter into an agreement with the publisher, to the effect that no claim or demand shall be made against the United States for the payment of such publication, and the register will decline to order the publication until such written agreement shall have been filed in his office. The cost of the publication of notice will, therefore, not be estimated by the surveyor general in future cases.

17. The register will also post copies of the said "*notice*" and "*diagram*" in his office for ninety days, and upon forwarding the case to this office will certify that they were so posted.

18. On the expiration of the ninety days, the claimant or his duly authorized agent must file with the register his own affidavit, supported by that of at least one other person cognizant of the fact, that said "*notice*" and "*diagram*" were posted in a conspicuous place upon the claim for the period of ninety consecutive days, giving the date of the same. The affidavit of the publisher must also be filed to the effect that the notice, a printed copy of which should be attached, was published in his newspaper for ninety days, giving the dates on which such publication commenced and ended, and that he has received payment in full for the same.

19. These affidavits may be taken before the register and receiver or any officer authorized to administer oaths within their district, but if taken before a magistrate, without an official seal, his official character must be authenticated under seal by the county clerk in the usual manner.

20. If all the proof furnished is satisfactory to the register and receiver, and no adverse claim has been filed, those officers will, at the end of the ninety days, so inform the applicant for patent and the surveyor general, which last-named officer will make an estimate of the expense of surveying and platting the claim, except in the case of *placer* claims on *surveyed* land where no further survey is required; and when the claimant shall have deposited the amount so estimated with any assistant United States treasurer or designated depository in favor of the United States Treasurer, to be passed to the credit of the fund created by "individual depositors for surveys of the public lands," and shall have filed with the surveyor general one of the duplicate certificates of deposit, that officer will order the claim to be surveyed and platted in accordance with the regulations of this office governing mineral surveys, except in cases where the claimant has had a preliminary survey made by the United States deputy surveyor, for the purpose of perfecting the diagram and notice posted on the claim, in which case such preliminary survey may be platted and adopted by the surveyor general for the final survey. Copies of plat and field-notes of survey are to be sent to the register and receiver and to the General Land Office, the latter accompanied by the certificate of deposit.

21. The register and receiver will examine the returns of the survey, and, if found satisfactory, will allow the entry to be completed at the rate of five dollars per acre, or fractional part of an acre, for lode claims, or two dollars and fifty cents per acre, or fractional part of an acre, for placer claims, and transmit all the papers on their files bear-

ing upon the case to the General Land Office, together with their joint opinion thereon, so that a patent may be issued if all is found regular.

22. In regard to *placer* claims on *surveyed* land, where the claimant applies to enter one hundred and sixty acres in legal subdivisions, no survey and plat of the claim are required; the entry in that case being allowed to be completed at the local land office as soon as satisfactory proof has been made after the expiration of ninety days' notice and publication, provided no adverse claimant has appeared in the meantime.

23. Where the claimant of a placer mine desires the subdivision of a quarter section, the service may be performed by county and local surveyors at the expense of the claimant, as required by law.

ADVERSE CLAIMANTS.

24. The sixth section of the mining act of July 26, 1866, provides that "whenever any adverse claimants to any mine, located and claimed as aforesaid, shall appear before the approval of the survey as provided in the third section of this act, all proceedings shall be stayed until a final settlement and adjudication, in the courts of competent jurisdiction, of the rights of possession to such claim, when a patent may issue as in other cases."

An opposing claimant must file his adverse notice with the register and receiver, and in order that it may appear to those officers whether or not the adverse claim is such an one as is contemplated by the said sixth section they will require the opposing claimant to present his affidavit, setting out in detail the nature of his adverse claim, stating when and how it originated, whether by purchase or by location, the names of all the original locators, with a certified copy of the original location from the mining recorder's office, and if he claims as a purchaser, an abstract of title, certified by the said recorder, tracing the title to the possession from the original locators to the claimant, should be furnished.

Such affidavit and accompanying papers will be carefully examined by the register and receiver, and if, in their judgment, an adverse claim is made out they will suspend all further action on the application for patent until an adjustment is had in the local courts; if they find otherwise they will refuse to suspend, but in either event the papers filed both by the applicant for patent and the adverse claimant will be referred to this office for review, when the decision of the register and receiver will either be affirmed or set aside, and all parties in interest notified of the result.

25. In the case of placer claims upon *surveyed* lands where no survey is required, the adverse claimant should appear before the entry is made; but if, from any cause, such adverse claimant should be unable to appear within the time specified, and should appear before the patent is issued, the register will nevertheless take his sworn statement, and transmit it to the General Land Office for such action as the Commissioner may deem proper.

26. When the parties are notified that an adverse claim is made out it then becomes the duty of the adverse claimant immediately to commence action in court, and to prosecute the same to final judgment or decree, by which the further proceedings of this office will be governed; yet in default of such suit being instituted within a reasonable time the original claim will be dealt with as if no adverse interest had been asserted.

You will afford every facility to parties desiring to avail themselves of the privileges accorded by these enactments, and when cases are completed promptly report them to this office.

Monthly returns must be made of all entries of lode and placer claims, with details specifically showing what lands have been so entered.

Copies of both the mining acts of July 26, 1866, and July 9, 1870, are hereto appended.

Very respectfully, your obedient servant,

JOS. S. WILSON,
Commissioner.

TO UNITED STATES REGISTERS AND
RECEIVERS AND SURVEYORS GENERAL.

DEPARTMENT OF THE INTERIOR,
August 9, 1870.

Approved:

J. D. COX,
Secretary.

(A.)

CHAP. CCLXII.

AN ACT granting the right of way to ditch and canal owners over the public lands and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the mineral lands of the public domain, both surveyed and unsurveyed, are hereby declared to be free and open to exploration and occupation by all citizens of the United States, and those who have declared their intention to become citizens, subject to such regulations as may be prescribed by law, and subject also to the local customs or rules of miners in the several mining districts, so far as the same may not be in conflict with the laws of the United States.

SEC. 2. *And be it further enacted,* That whenever any person, or association of persons, claim a vein or lode of quartz, or other rock in place, bearing gold, silver, cinnabar, or copper, having previously occupied and improved the same according to the local customs or rules of miners in the district where the same is situated, and having expended in actual labor and improvements thereon an amount of not less than one thousand dollars, and in regard to whose possession there is no controversy or opposing claim, it shall and may be lawful for said claimant, or association of claimants, to file in the local land office a diagram of the same, so extended laterally or otherwise as to conform to the local laws, customs, and rules of miners, and to enter such tract and receive a patent therefor, granting such mine, together with the right to follow such vein or lode, with its dips, angles, and variations to any depth, although it may enter the land adjoining, which land adjoining shall be sold subject to this condition.

SEC. 3. *And be it further enacted,* That upon the filing of the diagram as provided in the second section of this act, and posting the same in a conspicuous place on the claim, together with a notice of intention to apply for a patent, the register of the land office shall publish a notice of the same in a newspaper published nearest to the location of said claim, and shall also post such notice in his office for the period of ninety days; and after the expiration of said period, if no adverse claim shall have been filed, it shall be the duty of the surveyor general, upon application of the party, to survey the premises and make a plat thereof, indorsed with his approval, designating the number and description of the location, the value of the labor and improvements, and the character of the vein exposed; and upon the payment to the proper officer of five dollars per acre, together with the cost of such survey, plat, and notice, and giving satisfactory evidence that said diagram and notice have been posted on the claim during said period of ninety days, the register of the land office shall transmit to the General Land Office said plat, survey, and description, and a patent shall issue for the same thereupon. But said plat, survey, or description shall in no case cover more than one vein or lode, and no patent shall issue for more than one vein or lode, which shall be expressed in the patent issued.

SEC. 4. *And be it further enacted,* That when such location and entry of a mine shall be upon unsurveyed lands, it shall and may be lawful, after the extension thereto of the public surveys, to adjust the surveys to the limits of the premises according to the lo-

cation and possession and plat aforesaid; and the surveyor general may, in extending the surveys, vary the same from a rectangular form to suit the circumstances of the country and the local rules, laws, and customs of miners: *Provided*, That no location hereafter made shall exceed two hundred feet in length along the vein for each locator, with an additional claim for discovery to the discoverer of the lode, with the right to follow such vein to any depth, with all its dips, variations, and angles, together with a reasonable quantity of surface for the convenient working of the same, as fixed by local rules: *And provided further*, That no person may make more than one location on the same lode, and not more than three thousand feet shall be taken in any one claim by any association of persons.

SEC. 5. *And be it further enacted*, That as a further condition of sale, in the absence of necessary legislation by Congress, the local legislature of any State or Territory may provide rules for working mines involving easements, drainage, and other necessary means to their complete development; and those conditions shall be fully expressed in the patent.

SEC. 6. *And be it further enacted*, That whenever any adverse claimants to any mine, located and claimed as aforesaid, shall appear before the approval of the survey, as provided in the third section of this act, all proceedings shall be stayed until final settlement and adjudication, in the courts of competent jurisdiction, of the rights of possession to such claim, when a patent may issue as in other cases.

SEC. 7. *And be it further enacted*, That the President of the United States be, and is hereby, authorized to establish additional land districts, and to appoint the necessary officers under existing laws, wherever he may deem the same necessary for the public convenience in executing the provisions of this act.

SEC. 8. *And be it further enacted*, That the right of way for the construction of highways over public lands, not reserved for public uses, is hereby granted.

SEC. 9. *And be it further enacted*, That whenever, by priority of possession, rights to the use of water for mining, agricultural, manufacturing, or other purposes, have vested and accrued and the same are recognized and acknowledged by the local customs, laws, and the decisions of courts, the possessors and owners of such vested rights shall be maintained and protected in the same; and the right of way for the construction of ditches and canals for the purposes aforesaid is hereby acknowledged and confirmed: *Provided, however*, That whenever, after the passage of this act, any person or persons shall, in the construction of any ditch or canal, injure or damage the possession of any settler on the public domain, the party committing such injury or damage shall be liable to the party injured for such injury or damage.

SEC. 10. *And be it further enacted*, That wherever, prior to the passage of this act, upon the lands heretofore designated as mineral lands, which have been excluded from survey and sale, there have been homesteads made by citizens of the United States, or persons who have declared their intention to become citizens, which homesteads have been made, improved, and used for agricultural purposes, and upon which there have been no valuable mines of gold, silver, cinnabar, or copper discovered, and which are properly agricultural lands, the said settlers or owners of such homesteads shall have a right of preëmption thereto, and shall be entitled to purchase the same at the price of one dollar and twenty-five cents per acre, and in quantity not to exceed one hundred and sixty acres; or said parties may avail themselves of the provisions of the act of Congress approved May twenty, eighteen hundred and sixty-two, entitled "An act to secure homesteads to actual settlers on the public domain," and acts amendatory thereof.

SEC. 11. *And be it further enacted*, That upon the survey of the lands aforesaid, the Secretary of the Interior may designate and set apart such portions of the said lands as are clearly agricultural lands, which lands shall thereafter be subject to preëmption and sale as other public lands of the United States, and subject to all the laws and regulations applicable to the same.

Approved July 26, 1866.

(B.)

[PUBLIC—No. 147.]

AN ACT to amend "An act granting the right of way to ditch and canal owners over the public lands, and for other purposes."

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the act granting the right of way to ditch and canal owners over the public lands, and for other purposes, approved July twenty-six, eighteen hundred and sixty-six, be, and the same is hereby, amended by adding thereto the following additional sections, numbered twelve, thirteen, fourteen, fifteen, sixteen, and seventeen, respectively, which shall hereafter constitute and form a part of the aforesaid act.

SEC. 12. *And be it further enacted*, That claims, usually called "placers," including all forms of deposit, excepting veins of quartz, or other rock in place, shall be subject to entry and patent under this act, under like circumstances and conditions, and upon similar proceedings, as are provided for vein or lode claims: *Provided*, That where the lands have been previously surveyed by the United States, the entry in its exterior limits shall conform to the legal subdivisions of the public lands, no further survey or plat in such case being required, and the lands may be paid for at the rate of two dollars and fifty cents per acre: *Provided further*, That legal subdivisions of forty acres may be subdivided into ten-acre tracts; and that two or more persons, or associations of persons, having contiguous claims of any size, although such claims may be less than ten acres each, may make joint entry thereof: *And provided further*, That no location of a placer claim, hereafter made, shall exceed one hundred and sixty acres for any one person or association of persons, which location shall conform to the United States surveys; and nothing in this section contained shall defeat or impair any *bona fide* preëmption or homestead claim upon agricultural lands, or authorize the sale of the improvements of any *bona fide* settler to any purchaser.

SEC. 13. *And be it further enacted*, That where said person or association, they and their grantors, shall have held and worked their said claims for a period equal to the time prescribed by the statute of limitations for mining claims of the State or Territory where the same may be situated, evidence of such possession and working of the claims for such period shall be sufficient to establish a right to a patent thereto under this act, in the absence of any adverse claim: *Provided, however*, That nothing in this act shall be deemed to impair any lien which may have attached in any way whatever to any mining claim or property thereto attached prior to the issuance of a patent.

SEC. 14. *And be it further enacted*, That all *ex parte* affidavits required to be made under this act, or the act of which it is amendatory, may be verified before any officer authorized to administer oaths within the land district where the claims may be situated.

SEC. 15. *And be it further enacted*, That registers and receivers shall receive the same fees for services under this act as are provided by law for like services under other acts of Congress; and that effect shall be given to the foregoing act according to such regulations as may be prescribed by the Commissioner of the General Land Office.

SEC. 16. *And be it further enacted*, That so much of the act of March third, eighteen hundred and fifty-three, entitled "An act to provide for the survey of the public lands in California, the granting of preëmption rights, and for other purposes," as provides that none other than township lines shall be surveyed where the lands are mineral, is hereby repealed. And the public surveys are hereby extended over all such lands: *Provided*, That all subdividing of surveyed lands into lots less than one hundred and sixty acres may be done by county and local surveyors at the expense of the claimants; *And provided further*, That nothing herein contained shall require the survey of waste or useless lands.

SEC. 17. *And be it further enacted*, That none of the rights conferred by sections five, eight, and nine, of the act to which this act is amendatory shall be abrogated by this act, and the same are hereby extended to all public lands affected by this act; and all patents granted, or preëmption or homesteads allowed, shall be subject to any vested and accrued water rights, or rights to ditches and reservoirs used in connection with such water rights as may have been acquired under or recognized by the ninth section of the act of which this act is amendatory. But nothing in this act shall be construed to repeal, impair, or in any way affect the provisions of the "Act granting to A. Sutro the right of way and other privileges to aid in the construction of a draining and exploring tunnel to the Comstock lode, in the State of Nevada," approved July twenty-fifth, eighteen hundred and sixty-six.

Approved July 9, 1870.

Instructions showing the manner of proceeding to obtain title to public lands, by purchase, by location with warrants or agricultural college scrip, by preëmption, and homestead.

DEPARTMENT OF THE INTERIOR, GENERAL LAND OFFICE,
Washington, D. C., August 23, 1870.

The following is communicated in reference to the manner of acquiring title to the public lands under different laws of Congress:

There are two classes of public lands, the one class at \$1 25 per acre, which is designated as *minimum*, and the other at \$2 50 per acre, or *double minimum*.

Title may be acquired by purchase at public sale, or by ordinary "private entry," and in virtue of the preëmption and homestead laws.

1. At public sale where lands are "offered" at public auction to the highest bidder, either pursuant to proclamation by the President, or public notice given in accordance with directions from the General Land Office.

BY "PRIVATE ENTRY" OR LOCATION.

2. The lands of this class liable to disposal are those which have been offered at public sale, and thereafter remain unsold, and which have not been subsequently reserved or otherwise withdrawn from market. In this class of offered and unreserved public lands the following steps may be taken to acquire title:

CASH PURCHASES.

3. The applicant must present a written application to the register for the district in which the land desired is situated, describing the tract he wishes to purchase, giving its area. Thereupon the register, if the tract is vacant, will so certify to the receiver, stating the price, and the applicant must then pay the amount of the purchase money.

The receiver will then issue to the purchaser a duplicate receipt, and at the close of the month the register and receiver will make returns of the sale to the General Land Office, from whence, when the proceedings are found regular, a patent or complete title will be issued; and on surrender of the duplicate receipt such patent will be delivered, at the option of the patentee, either by the Commissioner at Washington, or by the register at the district land office.

LOCATIONS WITH WARRANTS.

4. Application must be made as in cash cases, but must be accompanied by a warrant duly assigned as the consideration for the land; yet where the tract is \$2 50 per acre, the party, in addition to the surrendered warrant, must pay in *cash* \$1 25 per acre, as the warrant is in satisfaction of only so many acres at \$1 25 per acre as are contained in the tract located.

A duplicate certificate of location will then be furnished the party, to be held until the patent is delivered, as in cases of cash sales.

The following fees are chargeable by the land officers, and the several amounts must be *paid at the time of location*:

For a 40-acre warrant, 50 cents each to the register and receiver—Total.....	\$1 00
For a 60-acre warrant, 75 cents each to the register and receiver—Total.....	1 50
For an 80-acre warrant, \$1 00 each to the register and receiver—Total.....	2 00
For a 120-acre warrant, \$1 50 each to the register and receiver—Total.....	3 00
For a 160-acre warrant, \$2 00 each to the register and receiver—Total.....	4 00

AGRICULTURAL COLLEGE SCRIP.

5. This scrip may be used—

First. In the location of lands at "*private entry*," but when so used is only applicable to lands not mineral which may be subject to private entry at \$1 25 per acre, yet is restricted to a technical "*quarter section*;" that is, lands embraced by the quarter-section lines indicated on the official plats of survey, or it may be located on a *part* of a "quarter section," where such part is taken as in full for a quarter, but it cannot be applied to different subdivisions to make an area equivalent to a

quarter section. The manner of proceeding to acquire title with this class of paper is the same as in cash and warrant cases, the fees to be paid being the same as on warrants. The location of this scrip at private entry is restricted to *three sections in each township* of land.

Second. In payment of preëmption claims in the same manner and under the same rules and regulations as govern the application to preëmptions of military land warrants; this, too, without regard to the limitation as to the quantity located in a township or in any one State.

PREËMPTIONS ADMISSIBLE TO THE EXTENT OF ONE QUARTER SECTION,
OR ONE HUNDRED AND SIXTY ACRES.

6. These may be made under the general preëmption laws of 4th September, 1841, (5 U. S. Stat., p. 455,) and 3d March, 1843, (vol. 5, p. 619,) as extended by act of June 2, 1862, (vol. 12, p. 413,) upon "offered" and "unoffered" lands, and upon any of the unsurveyed lands belonging to the United States to which the Indian title is extinguished, although in the case of unsurveyed lands no definite proceedings can be had as to the completion of the title until after the surveys shall have been extended and are officially returned to the district land office.

7. The act of 3d March, 1853, (10 U. S. Stat., p. 244,) extends the preëmption for one quarter, or 160 acres, at \$2 50 per acre, to every "*alternate*" United States or *reserved* section along the line of railroads.

8. The act of 27th March, 1854, (vol. 10, p. 269, chap. XXV,) protects the right of settlers on sections along the line of railroads where settlement existed prior to withdrawal, and in such cases allows the tract to be taken by preëmptors at \$1 25 per acre. Copies of these laws, marked A, B, C, and D, will be found herewith.

9. Where the tract is "*offered*" land the party must file with the district land office his declaratory statement as to the fact of his settlement within thirty days from the date of said settlement, and within one year from that date must appear before the register and receiver and make proof of his actual residence on and cultivation of the tract, and secure the same by paying *cash*, or by filing warrant or agricultural college scrip duly assigned to the preëmptor.

10. Where the tract has been surveyed and *not* offered at public sale, the claimant must file his declaratory statement within three months from date of settlement, and make proof and payment within eighteen months after the expiration of the three months allowed for filing his declaratory notice; or, in other words, within twenty-one months from date of settlement.

11. Should the settler in either of the aforesaid cases die before establishing his claim within the period limited by law, the title may be perfected by the executor, administrator, or one of the heirs, by making the requisite proof of settlement and paying for the land; the entry to be made in the name of "the heirs" of the deceased settler, and the patent will be issued accordingly.

12. Where settlements are made on *unsurveyed* lands, settlers are required, within three months after date of receipt at the district land office, of the approved plat of the township embracing their claims, to file their declaratory statement with the register of the proper land office, and thereafter to make proof and payment for the tract within eighteen months from the expiration of said three months.

Where settlers claim preëmption rights under the aforesaid special act of March 27, 1854, (10 U. S. Stat., p. 269,) they are now required to

file declaratory statements, and make proof and payment in like manner as other preëmtors.

The act of March 3, 1843, prohibits a second filing of a declaratory statement by any preëmtor qualified at the date of his first filing where said filing has been in all respects legal. Where the first filing, however, is illegal from any cause, he has the right to make a second and legal filing.

LAWS EXTENDING THE HOMESTEAD PRIVILEGE.

13. The original homestead act of May 20, 1862, gives to every citizen, and to those who had declared their intentions to become such, the right to a homestead on *surveyed* lands. This is conceded to the extent of one quarter section, or 160 acres, at \$1 25 per acre, or 80 acres of double minimum in any *organized district* embracing *surveyed* public lands.

14. To obtain homesteads the party must, in connection with his application, make an affidavit before the register or receiver that he is over the age of twenty-one, or the head of a family; that he is a citizen of the United States, or has declared his intention to become such, and that the entry is made for his exclusive use and benefit and for actual settlement and cultivation.

15. Where the applicant has made actual settlement on the land he desires to enter, but is prevented by reason of bodily infirmity, distance, or other good cause, from personal attendance at the district land office, the affidavit may be made before the clerk of the court for the county within which the land is situated.

16. The amendatory act of 21st March, 1864, (13 U. S. Stat., p. 35.) relaxes the requirements of personal attendance at the district office to persons in the military or naval service, *where the party's family, or some member, is residing on the land* that it is desired to enter, and upon which a *bona fide* improvement and cultivation had been made. In such cases the said act of 1864 allows the beneficiary to make the affidavit before the officer commanding in the branch of service in which he may be engaged, and the same may be filed, by the wife or other representative of the absentee, with the register, together with the homestead application.

His claim in that case will become effective from the date of filing, provided the required fee and commissions accompany the same; but immediately upon his discharge he must enter upon the land and make it his *bona fide* home, as required by the original act of 20th May, 1862. The twenty-fifth section of the act of July 15, 1870, so far modifies the original homestead act as to allow officers, soldiers, and sailors who have served in the Army or Navy of the United States for ninety days, and remained loyal to the Government, to enter 160 acres instead of 80 acres of double minimum lands. In all other respects the requirements of the original and amendatory acts remain in force, *actual settlement and cultivation being in no case dispensed with*. Special affidavits are required in such cases. Congress has also enacted that any alien of the age of twenty-one years and upward who has entered or shall enlist in the armies of the United States, and be honorably discharged therefrom, shall not be required to make any declaration of intention to become a citizen of the United States, and may, upon his petition and on proof of honorable military service, be admitted to full citizenship, after not less than one year's residence in the United States.

17. For homestead entries on *surveyed* lands in Michigan, Wisconsin,

Iowa, Missouri, Minnesota, Kansas, Nebraska, Dakota, Alabama, Mississippi, Louisiana, Arkansas, and Florida, fees are to be paid according to the following table:

Acres.	Price per acre.	Commissions.		Fees.	Total fees and commissions.
		Payable when entry is made.	Payable when certificate issues.	Payable when entry is made.	
160	\$1 25	\$4 00	\$4 00	\$10 00	\$18 00
80	1 25	2 00	2 00	5 00	9 00
40	1 25	1 00	1 00	5 00	7 00
80	2 50	4 00	4 00	10 00	18 00
40	2 50	2 00	2 00	5 00	9 00

NOTE.—Where entries are made on \$2 50 lands by officers, soldiers, and sailors, under the act of 15th July, 1870, double the amount of the above rates must of course be paid; that is, for 160 acres of \$2 50, \$8 at the date of entry, and \$8 upon proving up.

These rates will also apply to Ohio, Indiana, and Illinois, if any vacant tracts can be found liable to homestead in those three States, where but very few isolated tracts of public land remain undisposed of.

18. In the Pacific and other political divisions, viz., on *surveyed* lands in California, Nevada, Oregon, Colorado, New Mexico, and Washington, and in Arizona, Idaho, Utah, Wyoming, and Montana, the commissions and fees are to be paid according to the following table:

Acres.	Price per acre.	Commissions.		Fees.	Total fees and commissions.
		Payable when entry is made.	Payable when certificate issues.	Payable when entry is made.	
160	\$1 25	\$6 00	\$6 00	\$10 00	\$22 00
80	1 25	3 00	3 00	5 00	11 00
40	1 25	1 50	1 50	5 00	8 00
80	2 50	6 00	6 00	10 00	22 00
40	2 50	3 00	3 00	5 00	11 00

The note to the table under the seventeenth head applies also to this table of rates.

19. By the act of 21st June, 1866, (14 U. S. Stat., p. 66,) the public lands of Alabama, Mississippi, Louisiana, Arkansas, and Florida are subject to disposal only under the provisions of the homestead laws.

20. Upon payment of the fee and commissions, in accordance with the table under the seventeenth head, the receiver will issue his receipt therefor and furnish a duplicate to the claimant.

The matter will then be entered on their records and reported to the General Land Office.

21. An inceptive right is vested in the settler by such proceedings, and upon faithful observance of the law in regard to settlement and cultivation for the continuous term of five years, and at the expiration of that time, or within two years thereafter, upon proper proof to the satisfaction of the land officers, and payment to the receiver, the register will issue his certificate, and make proper returns to this office as the basis of a patent or complete title for the homestead.

NOTE.—The law is specific in requiring final proof to be made within *two years* after the expiration of the five years.

In making final proof, it is indispensable, under the statute, that the homestead party shall appear in person at the district land office, and there make the affidavit required of him by law in support of his claim. Where from physical disability, distance, or other good cause, the *witnesses* of said party cannot attend in person at the district office, their testimony in support of the claim may be taken where they reside, before an officer authorized by law to administer oaths.

Their testimony must state satisfactorily the reason of their inability to attend at the district office; and the credibility and responsibility of the witnesses must be certified by the officiating magistrate, whose official character must be authenticated under seal.

The corroborating testimony thus prepared must be deposited with the register and receiver and filed with the affidavit of the homestead party, and the decision of the register and receiver indorsed thereon as preliminary to the transmission of the same to the General Land Office.

22. Where a homestead settler dies before the consummation of his claim the widow, or, in case of her death, the heirs, may continue the settlement and cultivation, and obtain title upon requisite proof at the proper time. If the widow proves up, the title passes to her; if she dies before proving up and the heirs make the proof, the title will vest in them.

Where both parents die leaving infant heirs, the homestead may be sold for cash for the benefit of such heirs, and the purchaser will receive title from the United States.

23. The sale of a homestead claim by the settler to another party before completion of title is not recognized by this office, and not only vests no title or equities in the purchaser, but would be *prima facie* evidence of abandonment, and might give cause for cancellation of the claim.

A party may relinquish his claim, but only to the Government; and in such cases should surrender his duplicate receipt, with a relinquishment indorsed thereon; or if the duplicate has been lost, that fact should be stated in the relinquishment, duly signed and acknowledged.

Where application is made for the cancellation of a homestead entry on the ground of abandonment, the party must file his affidavit with the district land officers, setting forth the facts on which his allegations are founded, describing the tract and giving the name of the settler. Upon this the officers will set apart a day for hearing, giving all the parties in interest due notice of the time and place of trial.

After the trial the land officers will transmit the testimony, with their joint report, for the action of this office.

The expenses incident to such contest must be defrayed by the contestant, and no entry of the land can be made until the district officers have received notice from this office of the cancellation of the entry covering the same; nor does an informant obtain any privileges thereby. Such person must, if he desires the land, by proper diligence ascertain when notice of cancellation is received by register and receiver, and *then* make formal written application for the tract; the land, after reception by said officers of notice of cancellation, being always open to the *first legal applicant*, unless otherwise withdrawn from entry for any purpose.

24. As the law allows but one homestead privilege, a settler relinquishing or abandoning his claim cannot thereafter make a second entry. But in case of the illegality of his entry he may make a second claim.

Where an individual has made settlement on a surveyed tract and

filed his preëmption declaration therefor, he may change his filing into a homestead; yet such change is inadmissible where an adverse right has intervened, but in such cases the settler has the privilege of perfecting his title under the preëmption laws.

25. If the homestead settler does not wish to remain five years on his tract, the law permits him to pay for it with cash or warrants, upon making proof of settlement and cultivation for a period not less than six months from the date of entry to the time of payment.

This proof of actual settlement and cultivation must be the affidavit of the party made before the district officers, corroborated by the testimony of two credible witnesses.

26. There is another class of homesteads, designated as "adjoining farm homesteads." In these cases the law allows an applicant *owning* and *residing* on an *original* farm, to enter other land lying contiguous thereto, which shall not, with such farm, exceed in the aggregate 160 acres. Thus, for example, a party owning or occupying 80 *acres* may enter 80 additional of \$1 25, or 40 acres of \$2 50 land. Or suppose the applicant to own 40 *acres*, then he may enter 120 acres at \$1 25, or 40 acres at \$1 25 with 40 at \$2 50, if both classes of land should be found contiguous to his original farm.

In entries of "adjoining farms" the settler must describe, in his affidavit, the tract he owns and is settled upon as his original farm. Actual residence on the tract entered as an adjoining farm is not required, but *bona fide* improvement and cultivation of it must be shown for the period required by the statute.

27. The homestead and preëmption privilege is conceded to *Indians* who have voluntarily dissolved all connection with their tribes and no longer share in the annuities, or in exemptions, or in privileges secured to them by acts of Congress or treaty stipulations. Special forms of affidavit, with corroborative testimony, are required in these cases, forms of which are attached—Nos. 10 and 11.

28. Lands obtained under the homestead laws are exempted from liability for debts contracted prior to the issuing of patent therefor.

Copies of the homestead laws are hereto annexed, marked E, F, and G, as also forms of affidavits and applications, numbered from 1 to 12, required upon initiation of claims under the preëmption and homestead laws.

REGISTERS AND RECEIVERS' RETURNS.

29. Within three days from the close of each month the district land officers are required to make out and transmit to the General Land Office a statement of the business of their respective offices for the preceding month.

These reports are in form of abstracts of declarations of settlements filed, abstracts of lands sold, abstracts of homesteads entered, abstracts of military warrants and of agricultural college scrip located, accompanied by the certificates of purchase, receivers' receipts, homestead applications and affidavits, warrants and agricultural college scrip, and certificates of location.

The abstracts are all to be critically examined and thereafter duly certified by register and receiver as correct and in conformity with the records and the papers, and that all agree with each other.

The receiver is required also to render promptly a *monthly account* of all the moneys received, showing the balance due the Government at the close of each month.

At the end of every *quarter* he also must transmit a *quarterly* account

as receiver; upon the several accounts an adjustment is here made and submitted to the Treasury Department for final settlement.

He must also render a quarterly disbursing account of all moneys expended.

The receiver is required to deposit the moneys received by him at some depository designated by the Secretary of the Treasury when the amount on hand shall have reached the sum of *two thousand dollars*; and in no case is he authorized, without special instructions, to hold a larger amount in his hands.

30. It is the duty of the registers and receivers to be in attendance at their offices and give proper facilities and information to persons applying for lands.

31. A list of all the district land offices in the United States is hereto annexed.

32. Laws and instructions relating to mining claims form the subject of a separate circular.

JOS. S. WILSON,
Commissioner of the General Land Office.

(A.)

AN ACT to appropriate the proceeds of the sales of the public lands and to grant preëmption rights.

SEC. 10. *And be it further enacted*, That from and after the passage of this act, every person, being the head of a family, or widow, or single man over the age of twenty-one years and being a citizen of the United States, or having filed his declaration of intention to become a citizen, as required by the naturalization laws, who, since the first day of June, A. D. eighteen hundred and forty, has made, or shall hereafter make, a settlement in person on the public lands to which the Indian title had been, at the time of such settlement, extinguished, and which has been, or shall have been, surveyed prior thereto, and who shall inhabit and improve the same, and who has or shall erect a dwelling thereon, shall be, and is hereby, authorized to enter with the register of the land office for the district in which such land may lie, by legal subdivisions, any number of acres not exceeding one hundred and sixty, or a quarter-section of land, to include the residence of such claimant, upon paying to the United States the minimum price of such land, subject, however, to the following limitations and exceptions: No person shall be entitled to more than one preëmptive right by virtue of this act; no person who is the proprietor of three hundred and twenty acres of land in any State or Territory of the United States, and no person who shall quit or abandon his residence on his own land to reside on the public land in the same State or Territory, shall acquire any right of preëmption under this act; no lands included in any reservation, by any treaty, law, or proclamation of the President of the United States, or reserved for salines, or for other purposes; no lands reserved for the support of schools, nor the lands acquired by either of the two last treaties with the Miami tribe of Indians, in the State of Indiana, or which may be acquired of the Wyandot tribe of Indians, in the State of Ohio, or other Indian reservation to which the title has been or may be extinguished by the United States at any time during the operation of this act; no sections of land reserved to the United States alternate to other sections granted to any of the States for the construction of any canal, railroad, or other public improvement; no sections or fractions of sections included within the limits of any incorporated town; no portions of the public lands which have been selected as the site for a city or town; no parcel or lot of land actually settled and occupied for the purposes of trade and not agriculture; and no lands on which are situated any known salines or mines, shall be liable to entry under and by virtue of the provisions of this act. And so much of the proviso of the act of twenty-second of June, eighteen hundred and thirty-eight, or any order of the President of the United States, as directs certain reservations to be made in favor of certain claims under the treaty of Dancing Rabbit Creek, be, and the same is hereby, repealed: *Provided*, That such repeal shall not affect any title to any tract of land secured in virtue of said treaty.

SEC. 11. *And be it further enacted*, That when two or more persons shall have settled on the same quarter-section of land, the right of preëmption shall be in him or her who made the first settlement, provided such persons shall conform to the other provisions of this act; and all questions as to the right of preëmption arising between different settlers shall be settled by the register and receiver of the district within which the

land is situated, subject to an appeal to, and a revision by, the *Secretary of the Treasury [Interior] of the United States.

SEC. 12. *And be it further enacted*, That prior to any entries being made under and by virtue of the provisions of this act, proof of the settlement and improvement thereby required shall be made to the satisfaction of the register and receiver of the land district in which such lands may lie, agreeably to such rules as shall be prescribed by the Secretary of the Treasury, [Interior,] who shall each be entitled to receive fifty cents from each applicant for his services to be rendered as aforesaid; and all assignments and transfers of the right hereby secured, prior to the issuing of the patent, shall be null and void.

SEC. 13. *And be it further enacted*, That before any person claiming the benefit of this act shall be allowed to enter such lands, he or she shall make oath before the receiver or register of the land district in which the land is situated, (who are hereby authorized to administer the same,) that he or she has never had the benefit of any right of preemption under this act; that he or she is not the owner of three hundred and twenty acres of land in any State or Territory of the United States, nor hath he or she settled upon and improved said land to sell the same on speculation, but in good faith to appropriate it to his or her own exclusive use or benefit; and that he or she has not, directly or indirectly, made any agreement or contract, in any way or manner, with any person or persons whatsoever, by which the title which he or she might acquire from the Government of the United States should inure in whole or in part to the benefit of any person except himself or herself; and if any person taking such oath shall swear falsely in the premises, he or she shall be subject to all the pains and penalties of perjury, and shall forfeit the money which he or she may have paid for said land, and all right and title to the same; and any grant or conveyance which he or she may have made, except in the hands of *bona fide* purchasers, for a valuable consideration, shall be null and void. And it shall be the duty of the officer administering such oath to file a certificate thereof in the public land office of such district, and to transmit a duplicate copy to the General Land Office; either of which shall be good and sufficient evidence that such oath was administered according to law.

SEC. 14. *And be it further enacted*, That this act shall not delay the sale of any of the public lands of the United States beyond the time which has been, or may be, appointed by the proclamation of the President; nor shall the provisions of this act be available to any person or persons who shall fail to make the proof and payment, and file the affidavit required, before the day appointed for the commencement of the sales as aforesaid.

SEC. 15. *And be it further enacted*, That whenever any person has settled or shall settle and improve a tract of land subject at the time of settlement to private entry, and shall intend to purchase the same under the provisions of this act, such person shall, in the first case, within three months after the passage of the same, and in the last, within thirty days next after the date of such settlement, file with the register of the proper district a written statement describing the lands settled upon, and declaring the intention of such person to claim the same under the provisions of this act; and shall, where such settlement is already made, within twelve months after the passage of this act, and where it shall hereafter be made, within the same period after the date of such settlement, make the proof, affidavit, and payment herein required; and if he or she shall fail to file such written statement as aforesaid, or shall fail to make such affidavit, proof, and payment within the twelve months aforesaid, the tract of land so settled and improved shall be subject to the entry of any other purchaser.

Approved September 4, 1841.

(B.)

AN ACT to authorize the investigation of alleged frauds under the preëmption laws, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Commissioner of the General Land Office be, and he hereby is, authorized to appoint a competent agent, whose duty it shall be, under direction of said Commissioner, to investigate, upon oath, the cases of fraud under the preëmption laws alleged to exist in the Columbus land district, in the State of Mississippi, referred to in the late annual report of said Commissioner, communicated to Congress by letter of the Secretary of the Treasury, dated December the fifteenth, one thousand eight hundred and forty-two; and that such agent shall examine all witnesses who may be brought before him by the individual or individuals alleging the fraud, as well as those witnesses who may be produced by the parties in interest to sustain said claims; and that he be, and is hereby, invested with the power to administer to such witnesses an

*Appellate power vested in Commissioner of the General Land Office. See tenth section act 12th June, 1853. (11 Stat., p. 326.)

oath to speak the truth in regard to any question which may be deemed necessary to the full examination of the cases so alleged to be fraudulent; and such testimony shall be reduced to writing, and subscribed by each witness, and the same returned to the Commissioner, with the opinion of said agent on each claim; and any witness so examined before the said agent, who shall swear willfully and falsely in regard to any matter or thing touching such examination, shall be subject, on conviction, to all the pains and penalties of perjury; and it shall be the duty of the Commissioner to decide the cases thus returned, and finally to settle the matter in controversy, subject alone to an appeal to the Secretary of the Treasury: *Provided*, That the power conferred by this section upon such agent is hereby limited to the term of one year from and after the date of this act; and the compensation to be paid to said agent shall not exceed three dollars per day for each day he may be necessarily engaged in the performance of the duties required by this section.

SEC. 2. *And be it further enacted*, That in any case where a party entitled to claim the benefits of any of the preëmption laws shall have died before consummating his claim by filing, in due time, all the papers essential to the establishment of the same, it shall be competent for the executor or administrator of the estate of such party, or one of the heirs, to file the necessary papers to complete the same: *Provided*, That the entry in such cases shall be made in favor of "the heirs" of the deceased preëmptor, and a patent thereon shall cause the title to inure to said heirs as if their names had been specially mentioned.

SEC. 3. *And be it further enacted*, That every settler on section sixteen, reserved for the use of schools, or on other reserves or land covered by private claims of others, which was not surveyed at the time of such settlement, and who shall otherwise come within the provisions of the several preëmption laws in force at the time of the settlement, upon proof thereof before the register of the proper land office, shall be entitled to enter, at the minimum price, any other quarter-section, or fractional section, or fractional quarter-section, in the land district in which such school section or reserve or private claim may lie, so as not to exceed one hundred and sixty acres not reserved from sale or in the occupancy of any actual *bona fide* settler: *Provided*, Such settlement was made before the date of the act of fourth September, eighteen hundred and forty-one, and after the extinguishment of the Indian title.

SEC. 4. *And be it further enacted*, That where an individual has filed, under the late preëmption law, his declaration of intention to claim the benefits of said law for one tract of land, it shall not be lawful for the same individual at any future time to file a second declaration for another tract.

SEC. 5. *And be it further enacted*, That claimants under the late preëmption law, for land not yet proclaimed for sale, are required to make known their claims, in writing, to the register of the proper land office, within three months from the date of this act when the settlement has been already made, and within three months from the time of the settlement when such settlements shall hereafter be made, giving the designation of the tract and the time of settlement; otherwise his claim to be forfeited, and the tract awarded to the next settler, in the order of time, on the same tract of land, who shall have given such notice, and otherwise complied with the conditions of the law.

SEC. 6. *And be it further enacted*, That whenever the vacancy of the office, either of register or receiver, or of both, shall render it impossible for the claimant to comply with any requisition of any of the preëmption laws within the appointed time, such vacancy shall not operate to the detriment of the party claiming in respect to any matter essential to the establishment of his claim; *Provided*, That such requisition is complied with within the same period after the disability is removed as would have been allowed him had such disability not existed.

SEC. 7. *And be it further enacted*, That where a settler on the public lands may reside on a quarter section, a fractional quarter section, or a fraction of a section less than one hundred and sixty acres, and cultivated land on any other and different tract of either of the descriptions aforesaid, he or she shall be entitled, under the act of June twenty-two, one thousand eight hundred and thirty-eight, to the same privileges of a choice between two legal subdivisions of each, so as to include his or her house and farm, not to exceed one hundred and sixty acres in all, as is granted by the first section of that act to settlers residing on a quarter section, and cultivating on another and different quarter.

SEC. 8. *And be it further enacted*, That where two or more persons are residing on any of the species of tracts specified in section seven of this act, as required by the acts of the twenty-second of June, one thousand eight hundred and thirty-eight, and the first of June, one thousand eight hundred and forty, and any one or more of said settlers may have cultivated land during the period of residence required by either of said acts on another and different tract, or other and different tracts, the latter mentioned settlers shall be entitled to the option of entering the tract lived on, jointly with the other or others, or of abandoning the tract lived on to those who have not cultivated land as above required, and entering the tract or tracts cultivated, so as not to exceed one hundred and sixty acres to any one settler, who, by virtue of this section, is entitled to

a separate entry; or such joint settlers may jointly enter the tract so jointly occupied by them, and, in addition, enter other contiguous unoccupied lands, by legal subdivisions, so as not to exceed one hundred and sixty acres in all to each of such joint settlers: *Provided*, That the extended privileges granted to preëmtors by this act shall not be construed to deprive any other actual settler of his or her previous and paramount right of preëmption, or to extend to lands reserved for any other purpose whatever.

SEC. 9. *And be it further enacted*, That all persons coming within the tenth section of the act of the fourth of September, eighteen hundred and forty-one, entitled "An act to appropriate the proceeds of the sales of the public lands and to grant preëmption rights," shall be entitled to the right of preëmption under its provisions, notwithstanding such persons claiming the preëmption shall have settled upon and improved the lands claimed before the same were surveyed: *Provided*, Such settlements were made before the date of the aforesaid act, and after the extinguishment of the Indian title. And said act shall not be so construed as to preclude any person who may have filed a notice of intention to claim any tract of land by preëmption, under said act, from the right allowed by law to others to purchase the same by private entry after the expiration of the right of preëmption.

Approved March 3, 1843.

(C.)

AN ACT to extend preëmption rights to certain lands therein mentioned.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the preëmption laws of the United States, as they now exist, be, and they are hereby, extended over the alternate reserved sections of public lands along the lines of all the railroads in the United States, wherever public lands have been, or may be, granted by acts of Congress; and that it shall be the privilege of the persons residing on any of said reserved lands to pay for the same in soldiers' bounty land warrants, estimated at a dollar and twenty-five cents per acre, or in gold and silver, or both together, in preference to any other person, and at any time before the same shall be offered for sale at auction: *Provided*, That no person shall be entitled to the benefit of this act who has not settled and improved, or shall not settle and improve, such lands prior to the final allotment of the alternate sections to such railroads by the General Land Office: *And provided further*, That the price to be paid shall, in all cases, be two dollars and fifty cents per acre, or such other minimum price as is now fixed by law, or may be fixed, upon lands hereafter granted; and no one person shall have the right of preëmption to more than one hundred and sixty acres: *And provided further*, That any settler who has settled, or may hereafter settle, on lands heretofore reserved on account of claims under French, Spanish, or other grants which have been, or shall be, hereafter declared by the Supreme Court of the United States to be invalid, shall be entitled to all the rights of preëmption granted by this act and the act of fourth September, eighteen hundred and forty-one, entitled "An act to appropriate the proceeds of the public lands and to grant preëmption rights," after the lands shall have been released from reservation, in the same manner as if no reservation existed.

Approved March 3, 1853.

(D.)

AN ACT for the relief of settlers on lands reserved for railroad purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That every settler on public lands which have been, or may be, withdrawn from market in consequence of proposed railroads, and who had settled thereon prior to such withdrawal, shall be entitled to preëmption, at the ordinary minimum, to the lands settled on and cultivated by them: *Provided*, They shall prove up their rights according to such rules and regulations as may be prescribed by the Secretary of the Interior, and pay for the same before the day that may be fixed by the President's proclamation for the restoration of said lands to market.

Approved March 27, 1854.

(E.)

AN ACT to establish a land office in Colorado Territory, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That all the lands belonging to the United States, to which the In-

dian title has been or shall be extinguished, shall be subject to the operations of the preemption act of the 4th September, 1841, and under the conditions, restrictions, and stipulations therein mentioned: *Provided, however,* That when unsurveyed lands are claimed by preemption, notice of the specific tracts claimed shall be filed within six months after the survey has been made in the field; and on failure to file such notice, or to pay for the tract claimed within twelve months from the filing of such notice, the parties claiming such lands shall forfeit all right thereto, provided said notices may be filed with the surveyor general, and to be noted by him on the township plats, until other arrangements have been made by law for that purpose.

* * * *

Approved June 2, 1862.

(F.)

AN ACT to secure homesteads to actual settlers on the public domain.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That any person who is the head of a family, or who has arrived at the age of twenty-one years and is a citizen of the United States, or who shall have filed his declaration of intention to become such, as required by the naturalization laws of the United States, and who has never borne arms against the United States Government or given aid and comfort to its enemies, shall, from and after the first January, eighteen hundred and sixty-three, be entitled to enter one quarter section or a less quantity of unappropriated public lands, upon which said person may have filed a preemption claim, or which may, at the time the application is made, be subject to preemption at one dollar and twenty-five cents or less per acre; or eighty acres or less of such unappropriated lands at two dollars and fifty cents per acre, to be located in a body, in conformity to the legal subdivisions of the public lands, and after the same shall have been surveyed: *Provided,* That any person owning and residing on land may, under the provisions of this act, enter other land lying contiguous to his or her said land, which shall not, with the land so already owned and occupied, exceed in the aggregate one hundred and sixty acres.

SEC. 2. *And be it further enacted,* That the person applying for the benefit of this act shall, upon application to the register of the land office in which he or she is about to make such entry, make affidavit before the said register or receiver that he or she is the head of a family, or is twenty-one or more years of age, or shall have performed service in the Army or Navy of the United States, and that he has never borne arms against the Government of the United States, or given aid and comfort to its enemies, and that such application is made for his or her exclusive use and benefit, and that said entry is made for the purpose of actual settlement and cultivation, and not, either directly or indirectly, for the use or benefit of any other person or persons whomsoever; and upon filing the said affidavit with the register or receiver, and on payment of ten dollars, he or she shall thereupon be permitted to enter the quantity of land specified: *Provided, however,* That no certificate shall be given or patent issued therefor until the expiration of five years from the date of such entry; and if, at the expiration of such time, or at any time within two years thereafter, the person making such entry—or, if he be dead, his widow; or, in case of her death, his heirs or devisee; or, in case of a widow making such entry, her heirs or devisee, in case of her death—shall prove by two credible witnesses that he, she, or they have resided upon or cultivated the same for the term of five years immediately succeeding the time of filing the affidavit aforesaid, and shall make affidavit that no part of said land has been alienated, and that he has borne true allegiance to the Government of the United States; then, in such case, he, she, or they, if at that time a citizen of the United States, shall be entitled to a patent, as in other cases provided by law: *And provided further,* That in case of the death of both father and mother, leaving an infant child or children under twenty-one years of age, the right and fee shall inure to the benefit of said infant child or children; and the executor, administrator, or guardian may, at any time within two years after the death of the surviving parent, and in accordance with the laws of the State in which such children for the time being have their domicile, sell said land for the benefit of said infants, but for no other purpose; and the purchaser shall acquire the absolute title by the purchase, and be entitled to a patent from the United States, on payment of the office fees and sum of money herein specified.

SEC. 3. *And be it further enacted,* That the register of the land office shall note all such applications on the tract books and plats of his office, and keep a register of all such entries, and make return thereof to the General Land Office, together with the proof upon which they have been founded.

SEC. 4. *And be it further enacted,* That no lands acquired under the provisions of this act shall in any event become liable to the satisfaction of any debt or debts contracted prior to the issuing of the patent therefor.

SEC. 5. *And be it further enacted*, That if, at any time after the filing of the affidavit, as required in the second section of this act, and before the expiration of the five years aforesaid, it shall be proved, after due notice to the settler, to the satisfaction of the register of the land office, that the person having filed such affidavit shall have actually changed his or her residence, or abandoned said land for more than six months at any time, then and in that event the land so entered shall revert to the Government.

SEC. 6. *And be it further enacted*, That no individual shall be permitted to acquire title to more than one quarter section under the provisions of this act; and that the Commissioner of the General Land Office is hereby required to prepare and issue such rules and regulations consistent with this act, as shall be necessary and proper to carry its provisions into effect; and that the registers and receivers of the several land offices shall be entitled to receive the same compensation for any lands entered under the provisions of this act that they are now entitled to receive when the same quantity of land is entered with money, one-half to be paid by the person making the application at the time of so doing, and the other half on the issue of the certificate by the person to whom it may be issued; but this shall not be construed to enlarge the maximum of compensation now prescribed by law for any register or receiver: *Provided*, That nothing contained in this act shall be so construed as to impair or interfere in any manner whatever with existing preemption rights: *And provided further*, That all persons who may have filed their application for a preemption right prior to the passage of this act shall be entitled to all privileges of this act: *Provided further*, That no person who has served, or may hereafter serve, for a period of not less than fourteen days in the Army or Navy of the United States, either regular or volunteer, under the laws thereof, during the existence of an actual war, domestic or foreign, shall be deprived of the benefits of this act on account of not having attained the age of twenty-one years.

SEC. 7. *And be it further enacted*, That the fifth section of the act entitled "An act in addition to an act more effectually to provide for the punishment of certain crimes against the United States, and for other purposes," approved the third of March, in the year eighteen hundred and fifty-seven, shall extend to all oaths, affirmations, and affidavits required or authorized by this act.

SEC. 8. *And be it further enacted*, That nothing in this act shall be so construed as to prevent any person who has availed him or herself of the benefits of the first section of this act from paying the minimum price, or the price to which the same may have graduated, for the quantity of land so entered at any time before the expiration of the five years, and obtaining a patent therefor from the Government, as in other cases provided by law, on making proof of settlement and cultivation as provided by existing laws granting preemption rights.

Approved May 20, 1862.

(G.)

AN ACT amendatory to the homestead law, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That in case of any person desirous of availing himself of the benefits of the homestead act of twentieth May, eighteen hundred and sixty-two, but who, by reason of actual service in the military or naval service of the United States, is unable to do the personal preliminary acts at the district land office which the said act of twentieth May, eighteen hundred and sixty-two, requires, and whose family, or some member thereof, is residing on the land which he desires to enter, and upon which a *bona fide* improvement and settlement have been made, it shall and may be lawful for such person to make the affidavit required by said act before the officer commanding in the branch of the service in which the party may be engaged, which affidavit shall be as binding in law, and with like penalties, as if taken before the register or receiver; and upon such affidavit being filed with the register by the wife or other representative of the party, the same shall become effective from the date of such filing, provided the said application and affidavit are accompanied by the fee and commissions as required by law.

SEC. 2. *And be it further enacted*, That, besides the ten-dollar fee exacted by the said act, the homestead applicant shall hereafter pay to the register and receiver each, as commissions, at the time of entry, one per centum upon the cash price as fixed by law of the land applied for, and like commissions when the claim is finally established and the certificate therefor issued as the basis of a patent.

SEC. 3. *And be it further enacted*, That in any case hereafter in which the applicant for the benefit of the homestead, and whose family, or some member thereof, is residing on the land which he desires to enter, and upon which a *bona fide* improvement and settlement have been made, is prevented, by reason of distance, bodily infirmity, or other good cause, from personal attendance at the district land office, it shall and may

be lawful for him to make the affidavit required by the original statute before the clerk of the court for the county in which the applicant is an actual resident, and to transmit the same, with the fee and commissions, to the register and receiver.

SEC. 4. *And be it further enacted*, That in lieu of the fee allowed by the twelfth section of the preëmption act of fourth of September, eighteen hundred and forty-one, the register and receiver shall each be entitled to one dollar for their services in acting upon preëmption claims, and shall be allowed, jointly, at the rate of fifteen cents per hundred words, for the testimony which may be reduced by them to writing for claimants in establishing preëmption or homestead rights; the regulations for giving proper effect to the provisions of this act to be prescribed by the Commissioner of the General Land Office.

SEC. 5. *And be it further enacted*, That where a preëmptor has taken the initiatory steps required by existing laws in regard to actual settlement, and is called away from such settlement by being actually engaged in the military or naval service of the United States, and by reason of such absence is unable to appear at the district land office to make, before the register or receiver, the affidavits required by the thirteenth section of the preëmption act of fourth of September, eighteen hundred and forty-one, the time for filing such affidavit and making final proof and entry of location shall be extended six months after the expiration of his term of service, upon satisfactory proof, by affidavit or the testimony of witnesses, that the said preëmptor is so in the service, being filed with the register of the land office for the district in which his settlement is made.

SEC. 6. *And be it further enacted*, That the registers and receivers in the State of California, in the State of Oregon, and in the Territories of Washington, Nevada, Colorado, Idaho, New Mexico, and Arizona, shall be entitled to collect and receive, in addition to the fees and allowances provided by this act, fifty per centum of said fees and allowances as compensation for their services: *Provided*, That the salary and fees allowed any register or receiver shall not exceed in the aggregate the sum of three thousand dollars per annum.

Approved March 21, 1864.

(H.)

AN ACT for the disposal of the public lands for homestead, actual settlement in the States of Alabama, Mississippi, Louisiana, Arkansas, and Florida.

Be it further enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That from and after the passage of this act, all the public lands in the States of Alabama, Mississippi, Louisiana, Arkansas, and Florida shall be disposed of according to the stipulations of the homestead law of twentieth May, eighteen hundred and sixty-two, entitled "An act to secure homesteads to actual settlers on the public domain," and the act supplemental thereto, approved twenty-first of March, eighteen hundred and sixty-four, but with this restriction, that until the expiration of two years from and after the passage of this act, no entry shall be made for more than a half quarter section, or eighty acres; and in lieu of the sum of ten dollars required to be paid by the second section of said act, there shall be paid the sum of five dollars at the time of the issue of each patent; and that the public land in said States shall be disposed of in no other manner after the passage of this act: *Provided*, That no distinction or discrimination shall be made in the construction or execution of this act on account of race or color: *And provided further*, That no mineral lands shall be liable to entry and settlement under its provisions.

SEC. 2. *And be it further enacted*, That section second of the above-cited homestead law, entitled "An act to secure homesteads to actual settlers on the public domain," approved May twentieth, eighteen hundred and sixty-two, be so amended as to read as follows: That the person applying for the benefit of this act shall, upon application to the register of the land office in which he or she is about to make such entry, make affidavit before the said register or receiver that he or she is the head of a family or is twenty-one years or more of age, or shall have performed service in the Army or Navy of the United States, and that such application is made for his or her exclusive use and benefit, and that said entry is made for the purpose of actual settlement and cultivation, and not, either directly or indirectly, for the use or benefit of any other person or persons whomsoever; and upon filing the said affidavit with the register or receiver, and on payment of five dollars, when the entry is not more than eighty acres, he or she shall thereupon be permitted to enter the amount of land specified: *Provided, however*, That no certificate shall be given or patent issued therefor until the expiration of five years from the date of such entry; and if, at the expiration of such time, or at any time within two years thereafter, the person making such entry, or, if he be dead, his widow, or in case of her death, his heirs or devisee, or, in case of a widow making such entry, her heirs or devisee, in case of her death, shall prove by two credible witnesses that he, she, or they

have resided upon and cultivated the same for the term of five years immediately succeeding the time of filing the affidavit aforesaid, and shall make affidavit that no part of said lands has been alienated, and that he will bear true allegiance to the Government of the United States; then, in such case he, she, or they, if at that time a citizen of the United States, shall be entitled to a patent, as in other cases provided by law: *And provided further*, That in case of the death of both father and mother, leaving an infant child or children under twenty-one years of age, the right and fee shall inure to the benefit of said infant child or children; and the executor, administrator, or guardian may, at any time within two years after the death of the surviving parent, and in accordance with the laws of the State in which such children for the time being have their domicile, sell said land for the benefit of said infants, but for no other purpose, and the purchaser shall acquire the absolute title by the purchase, and be entitled to a patent from the United States on the payment of the office fees and sum of money herein specified: *Provided*, That until the first day of January, eighteen hundred and sixty-seven, any person applying for the benefit of this act shall, in addition to the oath hereinbefore required, also make oath that he has not borne arms against the United States, or given aid and comfort to its enemies.

SEC. 3. *And be it further enacted*, That all the provisions of the said homestead law, and the act amendatory thereof, approved March twenty-first, eighteen hundred and sixty-four, so far as the same may be applicable, except so far as the same are modified by the preceding sections of this act, are applied to and made part of this act as fully as if herein enacted and set forth.

Approved June 21, 1866.

(1.)

\$ ——— LAND OFFICE at ———, ———, 18 .

Mr. ——— has this day paid ——— dollars, the register's and receiver's fees, to file a declaratory statement, the receipt whereof is hereby acknowledged.

—————, *Receiver*.

No. ———

Mr. ———, having paid the fees, has this day filed in this office his declaratory statement, No. ———, for ———, section ———, township ———, of range ———, containing ——— acres, settled upon ———, 18 , being ——— offered.

—————, *Register*.

(2.)

Declaratory statement for cases where the land is not subject to private entry.

I ———, of ———, being ———, have, on the ——— day of ———, A. D. 18 , settled and improved the ——— quarter section number ———, in township number ———, of range number ———, in the district of lands subject to sale at the land office at ———, and containing ——— acres, which land has not yet been offered at public sale, and thus rendered subject to private entry; and I do hereby declare my intention to claim the said tract of land as a preëmption right under the provisions of said act of 4th September, 1841.

Given under my hand this ——— day of ———, A. D. 18 .

In presence of ———.

(3.)

For cases where the land claimed shall have been rendered subject to private entry since the date of the law.

I, _____, of _____, being _____, have, since the first day of _____, A. D. 18____, settled and improved the _____ quarter of section number _____, in township number _____, of range number _____, in the district of lands subject to sale at the land office at _____, and containing _____ acres, which land *has been rendered subject to private entry since the passage of the act of 4th September, 1841, but prior to my settlement thereon*; and I do hereby declare my intention to claim the said tract of land as a preëmption right, under the provisions of said act of 4th September, 1841.

Given under my hand this _____ day of _____, A. D. 18____.

In presence of _____.

(4.)

Affidavit requ red of preëmption claimant.

I, _____, claiming the right of preëmption under the provisions of the act of Congress entitled "An act to appropriate the proceeds of the sale of the public lands, and to grant preëmption rights," approved September 4, 1841, to the _____ quarter of section number _____, of township number _____, of range number _____, subject to sale at _____, do solemnly _____ that I have never had the benefit of any right of preëmption under this act; that I am not the owner of three hundred and twenty acres of land in any State or Territory of the United States, nor have I settled upon and improved said land to sell the same on speculation, but in good faith to appropriate it to my own exclusive use or benefit; and that I have not, directly or indirectly, made any agreement or contract, in any way or manner, with any person or persons whomsoever, by which the title which I may acquire from the Government of the United States should inure, in whole or in part, to the benefit of any person except myself.

I, _____, of the land office at _____, do hereby certify that the above affidavit was taken and subscribed before me, this _____ day of _____, A. D. 18____.

(5.)

We, _____, _____, do solemnly swear that _____, _____ and is an inhabitant of the _____ quarter of section number _____, of township number _____ north, of range number _____, and that no other person resided upon the said land, entitled to the right of preëmption; that the said _____ entered upon and made a settlement in person on the said land since the _____ day of _____, 18____, to wit, on the _____ day of _____, 18____, and has lived in the said house, and made it his exclusive home, from the _____

day of ———, 18 —, till the present time; that he did not remove from his own land within the State of ——— to make the settlement above referred to; and that he has since said settlement plowed, fenced, and cultivated about ——— acres of said land.

I, ———, do hereby certify that the above affidavit was taken and subscribed before me this ——— day of ———, A. D. 18 —.

We certify that ———, ———, whose name ——— subscribed to the foregoing affidavit, ——— person — of respectability.

—————, *Register.*

—————, *Receiver.*

(6.)

Homestead.

APPLICATION }

No. ——— }

LAND OFFICE at ———, ———, 18 —.

I, ———, of ———, do hereby apply to enter, under the provisions of the act of Congress approved May 20, 1862, entitled "An act to secure homesteads to actual settlers on the public domain," the ——— of section ———, in township ———, of range ———, containing ——— acres.

LAND OFFICE at ———, ———, 18 —.

I, ———, register of the land office, do hereby certify that the above application is for surveyed lands of the class which the applicant is legally entitled to enter under the homestead act of May 20, 1862, and that there is no prior, valid, adverse right to the same.

—————, *Register.*

(7.)

Homestead.

(AFFIDAVIT.)

LAND OFFICE at ———, ———, —.

I, ———, of ———, having filed my application No. ———, for an entry under the provisions of the act of Congress approved May 20, 1862, entitled "An act to secure homesteads to actual settlers on the public domain," do solemnly swear that [*Here state whether the applicant is the head of a family, or over twenty-one years of age; whether a citizen of the United States, or has filed his declaration of intention of becoming such; or, if under twenty-one years of age, that he has served not less than fourteen days in the Army or Navy of the United States during actual war; that said application No. — is made for his or her exclusive benefit; and that said entry is made for the purpose of actual settlement and cultivation, and not, directly or indirectly, for the use or benefit of any other person or persons whomsoever,*] and that I have not heretofore had the benefit of this act.

Sworn to and subscribed, this ——— day of ———, before ———.

[*Register or Receiver*] of the Land Office.

(8.)

*Military or naval homestead.*APPLICATION }
No. —. }

LAND OFFICE at —, —, 18 .

I, —, of —, being in the — service of the United States, do hereby apply to enter, under the provisions of the act approved March 21, 1864, amendatory of the homestead act of May 20, 1862, and for other purposes, a certain tract of land, which — is hereby authorized to designate at the foot of this application, as my homestead, and which I agree to hold as my own selection.

Attest: —, commanding officer at —.

I, —, as named in the foregoing application, No. —, do designate the tract selected for his homestead as the — of section —, in township —, of range —, containing — acres, and on which there is *bona fide* improvement and settlement, and on which I am residing and in charge for said applicant.

Witness my hand, this — day of —, 18 .

Attest: —, *Register*.

LAND OFFICE at —, —, 18 .

I, —, register of the land office, do hereby certify that the above application is for surveyed lands of the class which the applicant is legally entitled to enter under the homestead act of May 20, 1862, and that there is no prior, valid, adverse right to the same.

—, *Register*.

(9.)

Military or naval homestead.—Amendatory homestead act of March 21, 1864.

AFFIDAVIT.

STATE OF —, County of —,
(Date.) —.

I, —, of —, being now in the [*military or naval service*] of the United States, and proposing to file my application, No. —, for an entry under the provisions of the act of Congress approved March 21, 1864, amendatory of the original homestead act of May 20, 1862, and for other purposes, do solemnly swear that [*Here state whether applicant is the head of a family, or over twenty-one years of age; whether a citizen of the United States, or has filed his declaration of intention of becoming such; or, if under twenty-one years of age, that he has served not less than fourteen days in the Army or Navy of the United States during actual war; that said application, No. —, is made for his or her exclusive benefit; and that said entry is made for the purpose of actual settlement and cultivation, and not, directly or indirectly, for the use or benefit of any*

other person or persons whomsoever,] and that I have not heretofore had the benefit of this act.

I further swear that I have made *bona fide* settlement and improvement upon the tract which [here give name of representative] is authorized to designate as my homestead.

Sworn to and subscribed, this _____ day of _____, before _____
_____, United States commanding officer of _____, at _____.
[Rank and service.]

(10.)

Affidavit.—Indian homestead or preëmption.

I, _____, formerly of the _____ tribe of Indians, do solemnly swear that I have voluntarily dissolved all connection with that tribe, and that it is *bona fide* my intention to forego all claim to or share in any of its annuities or benefits, and in good faith to perform the duties of a citizen of the United States.

(11.)

Affidavit in support of Indian homestead or preëmption.

_____, _____, do solemnly swear that, to the best of _____ knowledge and belief, _____, formerly of the _____ tribe of Indians, has dissolved all connection with said tribe, and does not claim or share any of the annuities or benefits inuring to said tribe of Indians, by treaty or otherwise, but is performing all such duties as pertain to a citizen of the United States.

Witness: _____.

Sworn and subscribed to before me this _____ day of _____, 18 _____.

(12.)

Affidavit.

LAND OFFICE at _____,
(Date.) _____.

I, _____, of _____, having filed my application, No. _____, for an entry under the provisions of the act of Congress approved May 20, 1862, and desiring to avail myself of the twenty-fifth section of the act of July 15, 1870, in regard to land held at the double minimum price of \$2 50 per acre, do solemnly swear that I am the identical _____ who was a _____ in the company* commanded by Captain _____, in the _____ regiment of _____, commanded by _____,

* Where the party was a regimental or staff officer, or was in a different branch of the service, the affidavit must be varied in form according to the facts of the case.

in the war of 1861; that I continued in actual service for ninety days, and have remained loyal to the Government; that said application, No. —, is made for my exclusive benefit, and for the purpose of actual settlement and cultivation, and not, directly or indirectly, for the use or benefit of any other person or persons, and that I have not heretofore had the benefit of the homestead law.

Sworn to and subscribed before me this — day of —, —.

Register or receiver of the Land Office.

LIST OF THE DIFFERENT DISTRICT LAND OFFICES IN THE UNITED STATES FOR THE DISPOSAL OF THE PUBLIC LANDS.

Chillicothe, Ohio; Indianapolis, Indiana; Springfield, Illinois. In these, however, the proprietary interests of the United States are nearly all disposed of, only inconsiderable fragmentary parcels of public lands remaining undisposed of in these three States. The other offices now existing are established at Boonville, Ironton, and Springfield, Missouri; Mobile, Huntsville, and Montgomery, Alabama; Jackson, Mississippi; New Orleans and Natchitoches, Louisiana; Detroit, East Saginaw, Ionia, Marquette, and Traverse City, Michigan; Little Rock, Washington, Dardanelle, and Harrison, Arkansas; Tallahassee, Florida; Des Moines, Council Bluffs, Fort Dodge, and Sioux City, Iowa; Menasha, Falls of St. Croix, Stevens's Point, La Crosse, Bayfield, and Eau Claire, Wisconsin; San Francisco, Marysville, Humboldt, Stockton, Sacramento, Shasta, Los Angeles, and Visalia, California; Carson City, Belmont, Austin, and Aurora, Nevada; Olympia and Vancouver, Washington Territory; Taylor's Falls, St. Cloud, Jackson, New Ulm, Litchfield, Du Luth, and Alexandria, Minnesota; Oregon City, Roseburg, and La Grande, Oregon; Topeka, Augusta, Junction City, Concordia, and Humboldt, Kansas; West Point, Beatrice, Lincoln, Dakota City, and Grand Island, Nebraska; Santa Fé, New Mexico; Vermillion, Ron Homme, and Pembina, Dakota; Denver City, Fair Play, Pueblo, and Central City, Colorado; Boise City and Lewiston, Idaho; Helena, Montana; Prescott, Arizona; Salt Lake City, Utah; and Cheyenne, Wyoming.

LIST OF PAPERS ACCOMPANYING COMMISSIONER'S ANNUAL REPORT.

No. 1.—Tabular statement showing the number of acres of public lands surveyed in the States and Territories up to June 30, 1869, during the last fiscal year, and the total of the public lands surveyed up to June 30, 1870; also the total area of the public domain remaining unsurveyed within the same.

No. 2.—Statement of public lands sold; of cash and bounty land scrip received therefor; number of acres entered under the homestead law of May 20, 1862; of commissions received under the sixth section of said act; also land located with scrip under the agricultural college and mechanics' act of July 2, 1862, and commissions received by registers and receivers on the value thereof; and statement of incidental expenses thereon in the first half of the fiscal year commencing July 1, 1869, and ending June 30, 1870.

No. 3.—Statement showing like particulars for the second half of the fiscal year ending June 30, 1870.

No. 4.—Summary for the fiscal year ending June 30, 1870, showing the number of acres disposed of for cash; with bounty land scrip by entry, under the homestead laws of May 20, 1862, and March 21, 1864; with aggregate of \$10 homestead payments;

homestead commissions; also locations with agricultural college and mechanic scrip, under act of July 2, 1862.

No. 5.—Statement showing the quantity of swamp lands selected for the several States under acts of Congress approved March 2, 1849, September 28, 1850, and March 12, 1860, up to and ending September 30, 1870.

No. 6.—Statement exhibiting the quantity of swamp land approved to the several States under acts of Congress approved March 2, 1849, September 28, 1850, and March 12, 1860, up to and ending September 30, 1870.

No. 7.—Statement exhibiting the quantity of swamp land patented to the several States under acts of Congress approved September 28, 1850, and March 12, 1860; also the quantity certified to the State of Louisiana under act approved March 2, 1849.

No. 8.—Statement showing the State selections under the internal improvement grant of September 4, 1841, on the 30th of June, 1870.

No. 9.—Exhibit of bounty land business under acts of 1847, 1850, 1852, and 1855, showing the issue and locations from the commencement of operations under said acts to June 30, 1870.

No. 10.—Statement showing the selections made by certain States, of lands within their own limit, under agricultural and mechanic act of July 2, 1862, and its supplemental acts of April 14, 1864, and July 23, 1866; also the locations made with scrip under said acts.

No. 11.—Statement exhibiting land concessions by acts of Congress to States, for canal purposes, from the year 1827 to June 30, 1870.

No. 12.—Statement exhibiting land concessions by acts of Congress to States and corporations, for railroad and military wagon road purposes, from the year 1850 to June 30, 1870.

No. 13.—Estimate of appropriations required for the office of the Commissioner of the General Land Office for the fiscal year ending June 30, 1872.

No. 14.—Estimates of appropriations required to meet expenses of collecting the revenue from sales of public lands in the several States and Territories for the fiscal year ending June 30, 1872.

No. 15.—Estimates of appropriations for the surveying department for the fiscal year ending June 30, 1872.

No. 16.—Estimates of appropriations required for surveying the public lands for the fiscal year ending June 30, 1872.

No. 17.—Reports of surveyors general, A to Q, inclusive.

No. 18.—Statement of confirmed Indian pueblo grants and private land claims in New Mexico.

No. 19.—General tabular statement, exhibiting the following: No. 1, States and Territories containing public land; No. 2, areas of States and Territories containing public lands, in square miles and acres; No. 3, quantity sold; No. 4, entered under the homestead laws; No. 5, granted for military services; No. 6, granted for agricultural colleges; No. 7, approved under grants in aid of railroads; No. 8, approved swamp selections; No. 9, quantity granted for internal improvements; No. 10, donations and grants for schools and universities; No. 11, locations with Indian scrip; No. 12, locations with float scrip, under act of March 17, 1862; No. 13, estimated quantity granted to wagon roads; No. 14, quantity granted to ship canals; No. 15, salines; No. 16, seats of government and public buildings; No. 17, granted to individuals and companies; No. 18, granted for deaf and dumb asylums; No. 19, reserved for benefit of Indians; No. 20, reserved for companies, individuals, and corporations; No. 21, confirmed private land claims; No. 22, quantity remaining unsold and unappropriated June 30, 1870.

No. 20.—Connected map of the United States, from ocean to ocean, exhibiting the extent of public surveys, land districts, seats of surveyors general's offices, and district offices; also, localities of railroads of general interest, and of mineral deposit, this being the map, the plate of which is specially referred to in joint resolution No. 2, approved January 26, 1863, (12 U. S. Stat., p. 822.)

No. 21.—Maps showing the surveys in the several public land States and Territories, to wit: Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Dakota, Missouri, Arkansas, Louisiana, Mississippi, Alabama, Florida, Nebraska, Kansas, Indian Territory, Colorado, New Mexico, Montana, Idaho, Nevada, Utah, Arizona, California, Oregon, and Washington Territory, have been prepared, in view of the sixth section of the act of 25th April, 1812, (2 U. S. Stat., p. 717,) and are in the General Land Office, subject to such action as may be taken in regard to publication. Besides these there have also been prepared maps of Alaska and Wyoming, and one on Mercator's projection, indicating, from recognized authorities, the routes of commerce in connection with the Western and Eastern Hemispheres.

No. 22.—A historical and statistical table of the United States of North America will be found at the close of the foregoing report.

LEAVENWORTH CITY, KANSAS, *September 13, 1870.*

DEAR SIR: In relation to building-rocks in Kansas, I would state that a very important natural production is in the subsoil. This formation, classically denominated "bluff," can be manufactured into good brick in any portion of Eastern Kansas, especially with the admixture of a small proportion of sand.

As this formation differs but little in different portions of the State, almost every part of Kansas is abundantly supplied in this respect. When our coal fields in the east and the lignite beds in the west become thoroughly developed, brick will be manufactured and sold at reasonable rates.

The coal measures constitute the solid strata of the greatest portion of Eastern Kansas. They are bounded on the west by an irregular line from north to south, passing through Manhattan, and comprise an area of about 17,000 square miles. (*Vide* Professor G. C. Swallow's Report on the Geology of Kansas, p. 55.)

The different strata measure, in the aggregate, about 2,000 feet, and are composed of shales, sandstone, limestone, and twenty-two beds of coal, from one to seven feet thick. These different formations were denuded or cut down in the southeast, and laid bare the whole of the series from the base to the summit, so that by starting from near the southeast corner of the State and traveling on a line to Manhattan, their ruptured edges would be encountered in irregular steps and pass in review all the members of the series.

In this State, as well as in Missouri, the thickest beds of coal are found near the base of the coal measures; these, then, necessarily crop out in the southeastern portion of our State, while here our shafts only reach them in 700 feet; and they lie still deeper toward the north and west, in consequence of the accumulation of additional formations making up the upper portion of the section.

It is found, too, that the individual coal beds, as well as most all other formations of the series, thicken toward the south; consequently, in that direction we must look for a full development of our coal fields.

In connection with these coal-bearing rocks are those of limestone, the only material in the series suitable for building purposes. These strata are often thick, compact, and durable, though most of them will not take a fine dressing; yet they enter largely into numerous economical purposes. One of these formations constitutes what we call "Leavenworth marble," a variety of dolomite ten feet thick. It is embraced in No. 20 of the Miami County, Kansas, section, (Swallow's Geological Report, p. 79,) and No. 43 of the coal-shaft section, 331 feet below the surface. It crops out at many localities south of Kansas River, in the valley of Grand River, near Chillicothe, Missouri, in the valley of Crooked River, in Ray County, and at various other localities in the latter State, but does not always sustain the fine qualities developed here. I omit a description of this material, as I am informed that a specimen has been forwarded to your office. These limestones are sufficiently abundant to find some of them in outcrops in nearly every valley and ravine, and are, consequently, very generally available.

For a more detailed description of them, reference may be had to the vertical section of Professor Swallow's Report, beginning at page 16.

By far the most valuable building material in Kansas is found in the Permian series. These formations are embraced in an irregular belt, extending north and south through the State and immediately west of the coal measures. In crossing this belt, on the line of the Kansas

Pacific Railroad, it extends from Manhattan to Abilene, or the sixth principal meridian.

By reference to the vertical section of Professor Swallow's Geological Report, (p. 11,) you will observe that in it are many thick formations of magnesian limestone of various colors and textures. These strata, with the other formations contained in the series, form an aggregate of about 700 feet in thickness.

The section gives the general characteristics of the different strata, but a more specific description of the most prominent may be needful on the present occasion.

Those suitable for building purposes are of different shades of color, darkening down from a drab to a ferruginous brown, or shade out into the intermediate tints to canary color and milky white. The drab colors are sometimes mottled, and, in appearance, are almost identical with specimens I observed in the Patent Office some years since, labeled "From the magnesian limestone, England."

Some fine specimens of the white are found at Manhattan, and represented by No. 82 of the vertical section. It is sufficiently hard to dress well, and is of a subdued white, and durable.

No. 80 is usually found in nearly two equal layers. It is divided into large rectangular slabs by vertical seams. The color and texture vary materially in different localities. Near Council Grove it is close-grained, hard, and in color brilliant, approaching that of a canary tint. I hazard nothing in the opinion that this formation as it is there developed is unsurpassed as an elegant building stone. Were the markets of the Atlantic cities available, these rocks would be a mine of wealth.

No. 52 is a fine variety, with a brilliant buff color. The buildings at Fort Riley are mainly constructed of this formation.

No. 48 is known by the people as "Junction City marble." It is extensively quarried near Junction City, Riley County, where it is sawed by machinery into almost any form. The State-house at Topeka, in this State, an edifice estimated at two millions when completed, is to be constructed of this rock; one wing of which is finished with material furnished by the above mill. We have also some buildings in this city constructed of the same material, one of which, a mansion owned by Mr. A. A. Higgenbotham, would do credit to any city on the continent. This formation when first quarried is so soft and free from grit that it is sawed with great facility, but hardens by exposure. The hardening is probably produced by the crystallization of silica it holds in solution.

To continue the description of other strata or formations would only be repeating what has already been written. Like formations in the series are so numerous that no considerable area of the belt could be searched without finding something desirable in this line.

Their volume and fine qualities are developed toward the south. Specimens of these permian rocks should be put in the national collection. I had specimens of these permian formations of Kansas, so near like the material of which the imperial opera-house of Paris is constructed, that the difference could not be detected by the naked eye.

My attention was first drawn to these rocks in 1857, while surveying Government lands. Subsequently the facilities extended to me by your office here enabled me to continue the investigations, resulting in establishing the permian system, not previously known to exist here or in any other portion of the North American Continent. (*Vide* Rocks of Kansas, by G. C. Swallow and F. Hawn, herewith inclosed.)

We have yet another excellent building stone scattered through the State, in groups immediately west of the permian belt. They are a dark

ferruginous sandstone, often so rich in iron that the luster of that metal is developed under the chisel; yet, smelting of this ore does not come under the range of economical probabilities, in consequence of the large amount of silica it contains. They are sometimes more argillaceous and composed of large rectangular blocks, with smooth planes and well-defined edges. Such as are close and fine grained would dress well and would equal the brown-stone fronts of Fifth avenue in the city of New York. Some of these rocks are nearly identical with the material of which the Smithsonian Institution is built.

I can give these rocks none other but a local position. They seem to be "carpet-baggers," outliers (?). They are, however, often in considerable force and extent. Messrs. Meek and Hayden designate them in their section as No. 1, or lower cretaceous. Professor Haar, a noted German fossil botanist, refers them, from their organic remains, to the tertiary. If the object of this communication was not wholly practical and economical, I think I could produce some good arguments in favor of the latter reference. I will at all events state that these formations often jut down from the west into and partially fill valleys in the same manner as we find the tertiary sediment of the age of the White River basin, only they come further east. In this condition I found these ferruginous sandstones, with their characteristic impressions of leaves, in the valley of Salt Creek, near the salines in Nebraska, while examining the salt basin, under the direction of your office here. There they overlies carboniferous formations at or near the junction of the coal measures and the permian strata.

These rocks have probably been confounded with trias sandstone and another formation at the base of the cretaceous of like lithological appearance. But enough of science.

Among the cretaceous formations extending from Fort Harker mostly to the west boundary of the State, are also found good building stone, and sometimes even elegant. There are many of the strata that resemble the magnesian limestone of the permian, and are quite abundant north of the Arkansas River.

I made a hasty classification of these formations while running the first guide meridian west and five parallels, as you may observe in my report under my contract to your office here.

In concluding this branch of the subject, I hazard nothing in stating that there are but few sections of the Union of the extent of the State of Kansas that are so abundantly supplied with good and elegant building material.

My classification of soils, under the different contracts executed by me under the direction of your office here, was made with care, and is reliable so far as the matter could be determined by the existence of different species of plants, and often by test with a field case.

A word in explanation of the climate of Kansas. Our hottest summers are not correspondingly oppressive. In the past season the thermal range was unusually high. During the month of July, there were here 17 consecutive days in which the mercury marked from 94° to 100° , with an average of these high ranges of 96° . However high the temperature of the day might have been, before nine o'clock in the evening the mercury would fall back to 75° . These oscillations produced a mean diurnal range of the month of 21° . These great thermal ranges are the results of a dry atmosphere, clear and calm state of the weather during the night, affording the greatest facilities for the radiation of heat, and rarely wind enough to produce refraction in the ascending currents. I have observed that generally when the temperature reaches 94° and 96°

in some of the Atlantic cities, cases of *coup de soleil* occur. Sun-stroke does not occur here under 103°, and no fatal cases under 105°. By a reference to the meteorological tables of Professor Swallow's geological report, you will observe that the fall of rain during the summer months is much greater than at any other season, much less in the spring and autumn, and but little in the winter. The great advantage of such conditions is appreciated at a glance, particularly by the farmer.

In the progress of time Kansas will become as proverbial for her clear sky, salubrious climate, and the good health of her citizens as Italy now is. We have none of those harassing diseases, such as diphtheria, typhoid and typhus fevers, nor any dangerous thoracic disorders, except those brought here from other climates. Scarletina sometimes prevails, but generally in a mild form. Contagious diseases have never developed into an epidemic form. The prevalent diseases are malarial and of a periodic type.

But as the country is opened and improved, the soil turned up by the plow, even the malarial diseases vanish under the pure bright sunlight and invigorating air of our plains.

If I can serve you further in any manner, you have but to command me.

Very respectfully, your obedient servant,

F. HAWN.

Hon. JOSEPH S. WILSON,

Commissioner General Land Office.

HELENA, MONTANA TERRITORY, May 18, 1870.

SIR: I send herewith three specimens of ore. No. 1. Tin stone from Basin Gulch in Jefferson County, about twenty-five miles southwest from Helena. There are undoubtedly extensive mines of this mineral in that region, as large quantities of this stone are found in all the gulches in that locality, including the head of Ten Mile Creek.

I discovered this mineral in the spring of 1867, while engaged in prospecting for placer mines, and believe that I was the first to call attention to the existence of tin in this Territory. I have taken out quite a number of beautiful cabinet specimens of toads-eye tin stone, but have none on hand now. I have sent over there for specimens to be saved for me, which I will send you as soon as I receive them.

No. 2. Quartz containing gold and tellurium from the Granite Mountain, a patented lode at the head of Tucker Gulch, section 7, township 9 north, range 3 west, and section 12, township 9 north, range 4 west.

No. 3. Specimens of ore from the Try lode in section 32, township 10 north, range 3 west, and returned on township plat as agricultural. The proprietors of this lode are now making arrangements to apply for patent. Only small quantities of this kind of ore are found in the lode. The vein is about thirty feet in width, runs nearly northeast and southwest, dips southeast at an angle of about eighty degrees. The rock from this lode, taken from the dump without assorting, yields an average of nearly \$40 per ton in gold, by a mill test of about seven tons. Men working in the lode during the past winter for the proprietors, have made more than their wages by pounding picked specimens in a hand mortar. This lode has only lately been recorded, on account of the great width preventing a proper development of one wall, as required by the territorial law. I would like to have an assay made of this piece of ore, so

that I can embody it in my report when the final survey of the lot is made.

If I could have special authority from your office to obtain and send specimens, I could undoubtedly send you many valuable specimens from this Territory.

I remain, yours, truly,

GEO. B. FOOTE,

District Deputy United States Mineral Surveyor.

Hon. JOSEPH S. WILSON,

Commissioner of the General Land Office, Washington, D. C.

No. 1.—*Tabular statement showing the number of acres of public lands surveyed in the following land States and Territories up to June 30, 1863, during the last fiscal year, and the total of the public lands surveyed up to June 30, 1870; also, the total area of the public domain remaining unsurveyed within the same.*

Land States and Territories.	Areas of the public land States and Territories.		Number of acres of public lands surveyed up to June 30, 1863.	Number of acres of public lands surveyed prior to June 30, 1863, not heretofore reported.	Number of acres of public lands surveyed within the fiscal year ending June 30, 1870.	Total of the public lands surveyed up to June 30, 1870.	Total area of public lands remaining unsurveyed, and of course uncultivated and undisposed of, inclusive of the area of private land claims surveyed up to June 30, 1870.
	In acres.	In square miles.					
Wisconsin.....	34,511,360	53,924	34,511,360	.....	.....	34,511,360	.....
Iowa.....	35,228,600	55,045	35,228,600	.....	.....	35,228,600	.....
Minnesota.....	53,459,840	83,531	25,095,386	21,161	2,903,192	26,019,739	27,440,101
Kansas.....	52,043,520	81,318	26,061,589	436,126	2,671,948	29,169,663	23,873,857
Nebraska.....	48,636,800	75,995	16,864,145	.....	2,485,362	19,349,507	29,287,293
California.....	120,947,840	188,981	30,878,784	372,518	1,087,076	32,338,378	82,609,462
Nevada.....	71,737,741	112,090	2,963,127	.....	858,763	3,821,890	67,915,851
Oregon.....	60,975,360	95,274	8,368,564	.....	1,094,694	9,463,258	51,512,102
Washington Ter'y.....	44,796,160	69,994	5,063,775	.....	304,484	5,368,259	39,427,901
Colorado Territory.....	66,880,000	104,500	4,356,832	.....	3,269,495	7,626,327	59,253,673
Utah Territory.....	54,065,075	84,476	2,525,872	.....	685,636	3,211,508	50,853,567
Arizona Territory.....	72,906,304	113,916	686,028	69,134	1,006,621	1,761,783	71,144,521
New Mexico Ter'y.....	77,568,640	121,201	2,982,753	.....	1,258,106	4,240,859	73,327,781
Dakota Territory.....	96,595,840	150,932	4,878,948	.....	1,165,316	16,044,264	90,551,576
Idaho Territory.....	55,228,160	86,294	510,973	.....	383,538	894,511	54,333,649
Montana Territory.....	92,016,640	143,776	819,372	186,152	580,021	1,585,545	90,431,095
Wyoming Territory.....	62,645,120	97,883	.....	.....	.....	.....	62,645,120
Missouri.....	41,824,000	65,350	41,824,000	.....	.....	41,824,000	.....
Alabama.....	32,462,080	50,722	32,462,080	.....	.....	32,462,080	.....
Mississippi.....	30,179,840	47,156	30,179,840	.....	.....	30,179,840	.....
Louisiana.....	26,461,440	41,346	23,461,440	.....	3,693	23,465,133	2,996,307
Arkansas.....	33,406,720	52,198	33,406,720	.....	.....	33,406,720	.....
Florida.....	37,931,520	59,268	26,631,520	64,915	407,333	27,103,768	10,827,752
Ohio.....	25,576,960	39,964	25,576,960	.....	.....	25,576,960	.....
Indiana.....	21,637,760	33,809	21,637,760	.....	.....	21,637,760	.....
Michigan.....	36,128,640	56,451	36,128,640	.....	.....	36,128,640	.....
Illinois.....	35,462,400	55,410	35,462,400	.....	.....	35,462,400	.....
Indian Territory.....	44,154,240	68,991	.....	.....	.....	.....	44,154,240
Alaska.....	369,529,600	577,390	.....	.....	.....	.....	369,529,600
Total.....	1,834,992,400	2,867,185	508,567,668	1,150,006	18,165,278	527,882,952	1,307,115,448

*Of the surveys in Arizona Territory 960,504.74 acres are Navajo Indian lands, reserved by the second article of the treaty of June 1, 1868, (United States Laws, vol. 15, p. 668.)

†Of the surveys in New Mexico Territory 959,840.56 acres are Navajo Indian lands, reserved by the second article of the treaty of June 1, 1868, (United States Laws, vol. 15, p. 668.)

‡Of the surveys in Dakota Territory 918,352.70 acres are lands of the Sisseton and Wahpeton bands of Dakota or Sioux Indians, reserved by the third article, treaty of February 19, 1867, (United States Laws, vol. 15, p. 506.)

JOS. S. WILSON, *Commissioner.*

DEPARTMENT OF THE INTERIOR,

General Land Office, October 27, 1870.

No. 2.—Statement of public lands sold, of cash and bounty land scrip received therefor, number sixth section of said act; also, of land located with scrip under the agricultural college and thereof, and statement of incidental expenses thereon, in the first half year of the fiscal year

States and Territories.	Land offices.	Quantity sold for cash and bounty land scrip, at and above the minimum price of \$1 25, and amount received for the same, for the first half of the fiscal year ending December 31, 1869.		Exhibit of the amount paid in cash and in bounty land scrip, respectively, for the first half of the fiscal year ending December 31, 1869, mentioned in the first column.	
		Acres.	Amount.	Cash.	Bounty land scrip.
Ohio.....	Chillicothe.....	160.00	\$200 00	\$200 00	.....
Indiana.....	Indianapolis.....	710.85	888 56	888 56	.....
Illinois.....	Springfield.....	1,014.39	1,473 34	1,473 34	.....
Missouri.....	Boonville.....	8,623.09	13,205 88	12,973 53	\$232 35
Do.....	Ironton.....	1,200.67	2,205 44	2,205 44	.....
Do.....	Springfield.....	5,941.42	12,624 63	12,624 63	.....
Total.....		15,765.18	28,035 95	27,803 60	232 35
Alabama.....	Mobile.....		*133 10	133 10	.....
Do.....	Huntsville.....		*81 68	81 68	.....
Do.....	Montgomery.....		*273 41	273 41	.....
Total.....			*488 19	488 19	.....
Mississippi.....	Jackson.....		*368 04	368 04	.....
Louisiana.....	New Orleans.....		*776 01	776 01	.....
Do.....	Monroe.....				.....
Do.....	Natchitoches.....				.....
Total.....			*776 01	776 01	.....
Michigan.....	Detroit.....	6,038.93	7,893 65	7,736 51	157 14
Do.....	East Saginaw.....	10,087.42	16,729 89	11,865 41	4,864 48
Do.....	Ionia.....	20,569.91	72,216 15	71,603 78	612 37
Do.....	Marquette.....	13,944.40	20,776 74	20,776 74	.....
Do.....	Traverse City.....	6,706.24	19,395 82	19,395 82	.....
Total.....		57,346.90	137,012 25	131,378 26	5,633 99
Arkansas.....	Little Rock.....		*74 12	74 12	.....
Do.....	Washington.....		*883 24	883 24	.....
Do.....	Clarks ville.....		*541 14	541 14	.....
Total.....			*1,498 50	1,498 50	.....
Florida.....	Tallahassee.....		*1,036 49	1,036 49	.....
Iowa.....	Fort Des Moines.....	242.91	355 23	355 23	.....
Do.....	Council Bluffs.....	153.19	291 50	291 50	.....
Do.....	Fort Dodge.....	8,269.09	18,539 80	18,539 80	.....
Do.....	Sioux City.....	96,733.48	151,533 45	151,533 45	.....
Total.....		105,398.67	170,719 98	170,719 98	.....
Wisconsin.....	Menasha.....	12,897.93	16,273 53	16,273 53	.....
Do.....	Falls of St. Croix.....	8,544.25	18,904 16	18,904 16	.....
Do.....	Stevens' Point.....	10,573.39	13,266 89	13,266 89	.....
Do.....	La Crosse.....	4,711.08	6,052 30	6,052 30	.....
Do.....	Bayfield.....	18,902.47	33,542 61	33,542 61	.....
Do.....	Eau Claire.....	22,894.60	29,825 25	29,195 57	629 68
Total.....		78,523.72	117,864 74	117,235 06	629 68

* Ex-cess

ber of acres entered under the homestead law of May 20, 1862, of commissions received under mechanic act of July 2, 1862, and commissions received by registers and receivers on the value commencing July 1, 1869, and ending June 30, 1870.

Quantity of land entered under homestead acts of May 20, 1862, and June 21, 1866, with aggregate of \$5 and \$10 payments required by section 2 of the acts; and also with aggregate of registers' and receivers' commissions under section 6 of said act, and of act approved March 21, 1864, amendatory thereof, for the first half of the fiscal year ending December 31, 1869.				Aggregate disposed of for cash; also bounty land scrip, and of cash under homestead act of 1862, and acts amendatory.		Quantity of land located in the first half of said fiscal year, with agricultural college scrip, act July 2, 1862, and registers' and receivers' commissions on value of land located.		Incidental expenses.
Area of homestead entries in acres.	Fees.	Amount of registers' and receivers' commissions.	Aggregate of fees and registers' and receivers' commissions.	Acres.	Amount.	Acres.	Amount.	Amount.
82.02	\$10	\$3 04	\$13 04	242.02	\$210 00	.....	.....	\$615 46
120.00	10	3 00	13 00	830.85	898 56	.....	.....	847 09
.....	.....	.....	.....	1,014.39	1,473 34	.....	.....	829 46
47,451.84	3,905	1,531 01	5,436 10	56,074.93	17,110 88	480.00	\$8 00	1,148 29
43,816.74	3,165	1,147 33	4,312 33	45,017.41	5,370 44	.....	.....	615 14
69,656.12	5,530	2,118 00	7,648 00	75,597.54	18,154 63	160.00	4 00	866 72
160,924.70	12,600	4,796 34	17,396 34	176,689.88	40,635 95	640.00	12 00	2,630 15
31,241.79	2,135	833 00	2,968 00	31,241.79	2,268 10	.....	.....	851 54
29,370.76	2,135	791 00	2,926 00	29,370.76	2,216 68	.....	.....	576 62
90,485.76	7,615	2,734 00	10,349 00	90,485.76	7,888 41	.....	.....	802 85
151,098.31	11,885	4,358 00	16,243 00	151,098.31	12,373 19	.....	.....	2,230 97
54,044.72	3,905	1,426 34	5,331 34	54,044.72	4,273 04	.....	.....	603 32
47,043.90	3,065	1,228 00	4,293 00	47,043.90	3,841 01	.....	.....	715 87
2,153.32	215	82 00	297 00	2,153.32	215 60	.....	.....	456 52
.....	.....	.....	.....	.....	.....	.....	.....	250 00
49,197.22	3,280	1,310 00	4,590 00	49,197.22	4,056 01	.....	.....	1,422 39
6,293.21	410	180 10	590 10	12,332.14	8,303 65	.....	.....	1,418 91
14,638.38	1,295	539 58	1,834 58	24,725.80	18,024 89	.....	.....	1,229 15
23,148.92	2,250	1,059 56	3,309 56	43,718.83	74,466 15	.....	.....	3,782 90
944.39	60	41 90	101 90	14,888.79	20,836 74	.....	.....	2,308 90
15,630.07	1,465	723 96	2,188 96	22,336.31	20,860 82	.....	.....	3,224 46
60,654.97	5,480	2,545 10	8,025 10	118,001.87	142,492 25	.....	.....	12,084 41
35,250.68	3,160	1,133 90	4,293 90	35,250.68	3,234 12	.....	.....	880 63
47,322.43	3,600	1,308 55	4,908 55	47,322.43	4,483 24	.....	.....	744 93
72,512.69	5,925	2,101 01	8,026 01	72,512.69	6,466 14	.....	.....	664 82
155,085.80	12,685	4,543 46	17,228 46	155,085.80	14,183 50	.....	.....	1,599 38
25,800.27	2,685	1,052 00	3,737 00	25,800.27	3,721 49	.....	.....	520 72
826.68	85	38 79	123 79	1,069.59	440 23	.....	.....	803 42
760.00	100	98 70	198 70	913.19	391 50	.....	.....	505 82
26,010.95	3,060	1,452 87	4,512 87	34,880.04	21,599 80	.....	.....	1,154 40
57,121.04	6,005	2,428 00	8,433 00	153,854.72	157,538 45	16,317.64	408 00	3,252 95
85,318.67	9,250	4,018 36	13,268 36	190,717.34	179,969 98	16,317.64	408 00	5,716 59
4,270.89	355	157 23	512 23	17,168.82	16,628 53	.....	.....	855 22
*24,169.05	1,890	793 65	2,683 65	32,713.30	20,794 16	.....	.....	1,040 70
3,765.03	310	114 28	424 28	14,338.42	13,576 89	.....	.....	830 32
30,587.26	2,295	1,154 98	3,449 98	35,298.34	8,347 30	.....	.....	620 06
.....	.....	.....	.....	18,902.47	33,542 61	.....	.....	1,969 74
21,529.29	1,690	698 60	2,388 60	44,423.89	31,515 25	.....	.....	1,358 08
84,321.52	6,540	2,918 74	9,458 74	162,845.24	124,404 74	.....	.....	6,674 12

payments.

No. 2. —Statement of public lands sold, of cash and bounty land scrip received therefor,

States and Territories.	Land offices.	Quantity sold for cash and bounty land scrip, at and above the minimum price of \$1 25, and amount received for the same, for the first half of the fiscal year ending December 31, 1869.		Exhibit of the amount paid in cash and in bounty land scrip, respectively, for the first half of the fiscal year ending December 31, 1869, mentioned in the first column.	
		Acres.	Amount.	Cash.	Bounty land scrip.
California.....	San Francisco.....	81,455.38	\$114,283 70	\$114,283 70	
Do.....	Marysville.....	36,473.00	50,861 95	50,861 95	
Do.....	Humboldt.....	27,497.33	35,731 14	35,731 14	
Do.....	Stockton.....	48,389.35	67,540 14	67,540 14	
Do.....	Visalia.....	16,499.27	21,991 34	21,991 34	
Do.....	Sacramento.....	9,486.27	17,116 62	17,116 62	
Do.....	Los Angeles.....	3,868.33	4,835 42	4,835 42	
Total.....		223,668.93	312,160 31	312,160 31	
Nevada.....	Carson City.....	2,475.65	3,753 19	3,753 19	
Do.....	Austin.....	160.00	330 00	330 00	
Do.....	Belmont.....				
Do.....	Aurora.....	160.00	200 00	200 00	
Total.....		2,795.65	4,283 19	4,283 19	
Washington Ter...	Olympia.....	19,936.45	24,920 55	24,920 55	
Do.....	Vancouver.....	8,702.50	10,878 11	10,878 11	
Total.....		28,638.95	35,798 66	35,798 66	
Minnesota.....	Taylor's Falls.....	3,387.16	4,532 48	4,532 48	
Do.....	St. Cloud.....	9,076.25	11,864 80	11,864 80	
Do.....	Jackson.....	5,411.07	7,575 45	7,575 45	
Do.....	New Ulm.....	6,198.06	10,738 85	10,738 85	
Do.....	Litchfield.....	7,916.28	17,111 63	17,111 63	
Do.....	Du Luth.....	9,121.24	11,963 83	11,963 83	
Do.....	Alexandria.....	14,982.54	18,743 26	18,743 26	
Total.....		56,092.60	82,530 30	82,530 30	
Oregon.....	Oregon City.....	3,536.15	5,182 96	5,182 96	
Do.....	Roseburg.....	17,952.08	22,539 44	22,539 44	
Do.....	Le Grand.....	1,280.64	1,980 80	1,980 80	
Total.....		22,768.87	29,723 20	29,723 20	
Kansas.....	Topeka.....	11,626.92	23,361 03	23,361 03	
Do.....	Junction City.....	37,995.92	49,145 13	49,082 63	\$62 50
Do.....	Humboldt.....	26,894.16	34,313 97	34,313 97	
Total.....		76,517.00	106,820 13	106,757 63	62 50
Nebraska.....	West Point.....	16,963.09	24,773 57	24,773 57	
Do.....	Beatrice.....	144,941.02	181,556 45	178,324 52	3,231 93
Do.....	Lincoln.....	20,403.68	47,362 17	47,362 17	
Do.....	Dakota City.....	103,434.90	129,293 79	129,293 79	
Do.....	Grand Island.....	1,165.44	2,913 60	2,913 60	
Total.....		286,908.13	385,899 58	382,667 65	3,231 93
New Mexico Ter...	Santa Fé.....				
Dakota Territory..	Vermillion.....	15,641.41	19,551 82	19,551 82	
Colorado Territory.	Denver City.....	52,036.13	87,684 36	87,684 36	
Do.....	Fair Play.....	624.00	1,920 00	1,920 00	
Do.....	Central City.....	2,629.94	3,614 22	3,614 22	
Total.....		55,290.07	93,218 58	93,218 58	

number of acres entered under the homestead law of May 20, 1862, &c.—Continued.

Quantity of land entered under homestead acts of May 20, 1862, and June 21, 1866, with aggregate of \$5 and \$10 payments required by section 2 of the acts; and also with aggregate of registers' and receivers' commissions under section 6 of said act, and of act approved March 21, 1864, amendatory thereof, for the first half of the fiscal year ending December 31, 1869.				Aggregate disposed of for cash; also bounty land scrip, and of cash under homestead act of 1862, and acts amendatory.		Quantity of land located in the first half of said fiscal year with agricultural college scrip, act July 2, 1862, and registers' and receivers' commissions on value of land located.		Incidental expenses.
Area of homestead entries in acres.	Fees.	Amount of registers' and receivers' commissions.	Aggregate of fees and registers' and receivers' commissions.	Acres.	Amount.	Acres.	Amount.	Amount.
6,897.41	\$445	\$288 00	\$733 00	88,352.79	\$114,728 70	17,589.08	\$440 00	\$3,733 74
3,984.48	330	396 06	726 06	40,457.48	51,191 95			2,027 22
3,207.78	2'0	120 00	320 00	30,705.11	35,931 14			1,835 16
6,821.36	470	492 72	872 72	55,210.71	67,810 14			2,216 67
3,091.06	250	215 75	465 75	19,590.33	22,241 34	2,560.00	64 00	1,289 82
1,143 82	125	133 50	258 50	10,630.09	17,241 62			965 10
1,030.60	65	39 00	104 00	4,898.93	4,900 42			371 14
26,176.51	1,885	1,595 03	3,480 03	249,845.44	314,045 31	20,149.08	504 00	12,438 85
879.25	60	72 00	132 00	3,354.90	3,813 19			942 15
80.00	10	6 00	16 60	240.00	340 00			253 30
1,293.87	80	48 00	128 00	1,453.87	280 00			195 57
2,253.12	150	126 00	276 00	5,048.77	4,433 19			758 84
19,763.14	1,250	868 75	2,118 75	39,699.59	26,170 55	1,279.24	32 00	2,149 86
13,658.98	865	737 13	1,602 13	22,361.48	11,743 11			1,421 73
33,422.12	2,115	1,605 88	3,720 88	62,061.07	37,913 66	1,279.24	32 00	1,031 37
27,192.70	2,350	943 69	3,293 69	30,579.86	6,882 48	5,120.00	124 00	2,453 10
28,581.29	2,210	1,066 56	3,296 56	37,657.54	14,074 80	800.00	20 00	647 37
21,001.06	1,895	1,987 05	3,882 05	26,412.13	9,470 45			882 28
32,155.21	3,310	1,744 67	5,054 67	38,353.27	14,048 85			823 71
22,644.93	2,665	1,682 29	4,347 29	30,561.21	19,776 63			849 91
2,517.37	190	86 00	276 00	11,638.61	12,153 83	3,186.54	104 00	1,116 58
36,264.27	2,355	933 67	3,288 67	51,246.81	21,098 26	21,437.71	535 78	860 28
170,356.83	14,975	8,463 93	23,438 93	226,440.43	97,505 30	30,544.25	783 78	1,116 61
15,864.12	1,065	668 22	1,733 22	19,400.27	6,247 96			6,296 74
15,933.48	1,045	721 34	1,766 34	33,885.56	23,604 44	1,600.00	40 00	835 88
3,585.21	225	144 35	369 35	4,865.85	2,205 80			1,560 46
35,382.81	2,335	1,533 91	3,868 91	58,151.68	32,058 20	1,600.00	40 00	829 30
20,523.36	2,335	986 65	3,321 65	32,150.28	25,696 03			3,225 64
141,868.00	10,735	4,370 98	15,105 98	179,863.92	59,880 13	30,597.87	724 00	1,158 95
16,374.09	1,450	671 17	2,121 17	43,268.25	35,763 97			2,125 79
178,765.45	14,520	6,028 80	20,548 80	255,282.45	121,340 13	30,597.87	724 00	1,373 26
24,340.39	1,925	884 52	2,809 52	41,303.48	26,698 57			4,658 00
61,862.55	4,140	1,750 18	5,890 18	206,803.57	185,696 45			1,217 94
64,571.03	7,990	3,270 83	11,260 83	84,974.71	55,352 17	320.00	8 00	2,475 20
43,014.07	2,730	1,080 95	3,810 95	146,448.97	132,023 79	1,440.00	36 00	1,537 24
6,136.33	765	392 76	1,067 76	7,301.77	3,678 60			2,740 12
199,924.37	17,550	7,289 24	24,839 24	486,832.50	403,449 58	1,760.00	44 00	308 26
								8,278 76
								500 08
42,805.97	2,700	1,088 78	3,788 78	58,447.38	22,251 82	160.00	4 00	1,106 90
42,370.25	3,860	2,587 50	6,447 50	94,406.38	91,544 36	6,556.01	164 00	2,604 10
960.00	80	48 00	128 00	624.00	1,920 00			688 40
43,330.25	3,940	2,635 50	6,575 50	3,589.94	3,694 22			867 58
				98,620.32	97,158 58	6,556.01	164 00	4,160 08

No. 2.—Statement of public lands sold, of cash and bounty land scrip received therefor,

States and Territories.	Land offices.	Quantity sold for cash and bounty land scrip, at and above the minimum price of \$1 25, and amount received for the same, for the first half of the fiscal year ending December 31, 1869.		Exhibit of the amount paid in cash and in bounty land scrip, respectively, for the first half of the fiscal year ending December 31, 1869, mentioned in the first column.	
		Acres.	Amount.	Cash.	Bounty land scrip.
Idaho Territory....	Boise City	2,300.28	\$2,875 40	\$2,875 40	.....
Do.....	Lewiston.....	.....	.....	.....	.....
Total .....	.....	2,300.28	2,875 40	2,875 40	.....
Montana Territory.	Helena	8,307.31	10,331 63	10,331 63	.....
Arizona Territory..	Prescott .....	.....	.....	.....	.....
Utah Territory	Salt Lake City.....	18,331.32	23,014 13	23,014 13	.....

DEPARTMENT OF THE INTERIOR, *General Land Office, October 27, 1870.*

number of acres entered under the homestead law of May 20, 1862, &c.—Continued.

Quantity of land entered under homestead acts of May 20, 1862, and June 21, 1866, with aggregate of \$5 and \$10 payments required by section 2 of the acts; and also with aggregate of registers' and receivers' commissions under section 6 of said act, and of act approved March 21, 1864, amendatory thereof, for the first half of the fiscal year ending December 31, 1869.				Aggregate disposed of for cash; also bounty land scrip, and of cash under homestead act of 1862, and acts amendatory.		Quantity of land located in the first half of said fiscal year, with agricultural college scrip, act July 2, 1862, and registers' and receivers' commissions on value of land located.		Incidental expenses.
Area of homestead entries in acres.	Fees.	Amount of registers' and receivers' commissions.	Aggregate of fees and registers' and receivers' commissions.	Acres.	Amount.	Acres.	Amount.	Amount.
4,926.57	\$330	\$196 50	\$526 50	7,226.85	\$3,205 40	.....	.....	\$1,082 07 500 00
4,926.57	330	196 50	526 50	7,226.85	3,205 40	.....	.....	1,582 07
15,504.08	980	586 50	1,566 50	23,811.39	11,311 63	.....	.....	610 29
.....	.....	.....	.....	.....	.....	.....	.....	500 00
9,396.10	650	380 40	1,030 40	27,727.42	23,664 13	.....	.....	1,454 93

JOS. S. WILSON, *Commissioner*.

No. 2.—Statement of the public lands sold, of cash and bounty land scrip received therefor,

RECAPIT

States and Territories.	Quantity sold for cash and bounty land scrip at and above the minimum price of \$1 25, and amount received for the same, for the first half of the fiscal year ending December 31, 1869.		Exhibit of the amount paid in cash and bounty land scrip, respectively, for the first half of the fiscal year ending December 31, 1869, mentioned in the first column.	
	Acres.	Amount.	Cash.	Military scrip.
Ohio	160.00	\$200 00	\$200.00	.....
Indiana	710.85	888 56	888.56	.....
Illinois	1,014.39	1,473 34	1,473.34	.....
Missouri	15,765.18	28,035 95	27,803.60	\$232 35
Alabama .....	.....	* 488 19	488.19	.....
Mississippi .....	.....	* 368 04	368.04	.....
Louisiana .....	.....	* 776 01	776.01	.....
Michigan	57,346.90	137,012 25	131,378.26	5,633 99
Arkansas .....	.....	* 1,498 50	1,498.50	.....
Florida .....	.....	* 1,036 49	1,036.49	.....
Iowa	105,398.67	170,719 98	170,719.98	.....
Wisconsin	78,523.72	117,864 74	117,235.06	629 68
California	223,668.93	312,160 31	312,160.31	.....
Nevada	2,795.65	4,283 19	4,283.19	.....
Washington Territory	28,638.95	35,798 66	35,798.66	.....
Minnesota	56,092.60	82,530 30	82,530.30	.....
Oregon	22,768.87	29,723 20	29,723.20	.....
Kansas	76,517.00	106,820 13	106,757.63	62 50
Nebraska	286,908.13	385,899 58	382,667.65	3,231 93
New Mexico .....	.....	.....	.....	.....
Dakota Territory	15,641.41	19,551 82	19,551.82	.....
Colorado Territory	55,290.07	93,218 58	93,218.58	.....
Idaho Territory	2,300.28	2,875 40	2,875.40	.....
Montana Territory	8,307.31	10,331 63	10,331.63	.....
Arizona Territory .....	.....	.....	.....	.....
Utah Territory	18,331.32	23,014 13	23,014.13	.....
Total	1,056,180.23	1,566,568 98	1,556,778.53	9,790 45

To which add number of acres located with agricultural scrip and commissions
Also, commissions received on homestead entries as shown in column No. 3 of

*Excess

DEPARTMENT OF THE INTERIOR,
General Land Office, October 27, 1870.

number of acres entered under the homestead law of May 20, 1862, &c.—Continued.

ULATION.

Quantity of land entered under homestead acts of May 20, 1862, and June 21, 1866, with aggregate of \$5 and \$10 payments required by section 2 of the acts; and also with aggregate of registers' and receivers' commissions under section 6 of said act and of act approved March 21, 1864, amendatory thereof, for the first half of the fiscal year ending December 31, 1869.				Aggregate disposed of for cash; also bounty land scrip, and of cash under homestead act of 1862, and acts amendatory.		Quantity of land located in the first half of said fiscal year with agricultural college scrip, act July 2, 1862, and registers' and receivers' commissions on value of land located.		Incidental expenses.
Area of homestead entries in acres.	Aggregate of \$5 and \$10 payments.	Amount of registers' commissions.	Aggregate of fees and registers' and receivers' commissions.	Acres.	Amount.	Acres.	Amount.	Amount.
82.02	\$10 00	\$3 04	\$13 04	242.02	\$210 00			\$615 46
120 00	10 00	3 00	13 00	830.85	898 56			847 09
				1,014.39	1,473 34			829 46
160,924.70	12,600 00	4,796 34	17,396 34	176,689.88	40,635 95	640.00	\$12 00	2,630 15
151,098.31	11,885 00	4,358 00	16,243 00	151,098.31	12,373 19			2,230 97
54,044.72	3,905 00	1,426 34	5,331 34	54,044.72	4,273 04			603 32
49,197.22	3,280 00	1,310 00	4,590 00	49,197.22	4,056 01			1,422 39
60,654.97	5,480 00	2,545 10	8,025 10	118,001.87	142,492 25			12,084 41
155,085.80	12,685 00	4,543 46	17,228 46	155,085.80	14,183 50			1,599 38
25,800.27	2,685 00	1,052 00	3,737 00	25,800.27	3,721 49			526 72
85,318.67	9,250 00	4,018 36	13,268 36	190,717.34	179,969 98	16,317.64	408 00	5,716 59
84,321.52	6,540 00	2,918 74	9,458 74	162,845.24	124,404 74			6,674 12
26,176.51	1,885 00	1,595 03	3,480 03	249,845.44	314,045 31	20,149.08	504 00	12,438 85
2,253.12	150 00	126 00	276 00	5,048.77	4,433 19			2,149 86
33,422.12	2,115 00	1,605 88	3,720 88	62,061.07	37,913 66	1,279.24	32 00	2,453 10
170,356.83	14,975 00	8,463 93	23,438 93	226,449.43	97,505 30	30,544.25	783 78	6,296 74
35,382.81	2,335 00	1,533 91	3,868 91	58,151.68	32,058 20	1,600.00	40 00	3,225 64
178,765.45	14,520 00	6,028 80	20,548 80	255,282.45	121,340 13	30,597.87	724 00	4,658 00
199,924.37	17,550 00	7,289 24	24,839 24	486,832.50	403,449 58	1,760.00	44 00	8,278 76
								500 00
42,805.97	2,700 00	1,088 78	3,788 78	58,447.38	22,251 82	160.00	4 00	1,106 90
43,330.25	3,940 00	2,635 50	6,575 50	98,620.32	97,158 58	6,556.01	164 00	4,160 08
4,926.57	330 00	196 50	526 50	7,226.85	3,205 40			1,582 07
15,504.08	980 00	586 50	1,566 50	23,811.39	11,311 63			610 29
								500 00
9,396.10	650 00	380 40	1,030 40	27,727.42	23,664 13			1,454 93
1,588,892.38	130,460 00	58,504 85	188,964 85	2,645,072.61	1,697,028 98	109,604.09	2,715 78	85,189 28
thereon				109,604.09	2,715 78			
section 3					58,504 85			
				2,754,676.70	1,758,249 61			

payments.

JOS. S. WILSON, *Commissioner.*

No. 3.—Statement of public lands sold, of cash and bounty land scrip received therefor, number sixth section of said act; also, of land located with scrip under the agricultural college and thereof, and statement of incidental expenses thereon, in the second half year of the fiscal year

States and Territories.	Land offices.	Quantity sold for cash and bounty land scrip, at and above the minimum price of \$1 25, and amount received for the same, for the second half of the fiscal year ending June 30, 1870.		Exhibit of the amount paid in cash and in bounty land scrip, respectively, for the second half of the fiscal year ending June 30, 1870, mentioned in the first column.	
		Acres.	Amount.	Cash.	Bounty land scrip.
Ohio	Chillicothe	80.00	\$275 00	\$275 00	.....
Indiana	Indianapolis	3,207.40	5,675 89	5,675 89	.....
Illinois	Springfield	1,831.82	2,571 11	2,571 11	.....
Missouri	Boonville	10,640.30	15,780 95	15,780 95	.....
Do.	Ironton	2,767.87	5,805 60	5,805 60	.....
Do.	Springfield	9,363.46	16,393 53	16,393 53	.....
Total .....	.....	22,771.63	37,980 08	37,980 08	.....
Alabama	Mobile .....	.....	*531 38	531 38	.....
Do.	Huntsville .....	.....	*541 33	541 33	.....
Do.	Montgomery .....	.....	*569 49	569 49	.....
Total .....	.....	.....	*1,642 20	1,642 20	.....
Mississippi	Jackson .....	.....	*133 21	133 21	.....
Louisiana	New Orleans .....	.....	*435 38	435 38	.....
Do.	Monroe .....	.....	.....	.....	.....
Do.	Nachitoches .....	.....	.....	.....	.....
Total .....	.....	.....	*435 38	435 38	.....
Michigan	Detroit	3,542.66	4,424 88	4,424 88	.....
Do.	East Saginaw	5,612.49	8,658 95	5,654 27	\$3,004 68
Do.	Ionia	5,604.34	13,406 77	13,406 77	.....
Do.	Marquette	6,095.48	10,830 36	10,830 36	.....
Do.	Traverse City	3,633.52	6,243 49	6,243 49	.....
Total .....	.....	24,488.49	43,564 45	40,559 77	3,004 68
Arkansas	Little Rock .....	.....	*234 38	234 38	.....
Do.	Washington .....	.....	*728 25	728 25	.....
Do.	Clarksville .....	.....	*1,756 64	1,756 64	.....
Total .....	.....	.....	*2,719 27	2,719 27	.....
Florida	Tallahassee .....	.....	*1,081 57	1,081 57	.....
Iowa	Fort Des Moines	671.96	989 94	989 94	.....
Do.	Council Bluffs	187.78	368 00	368 00	.....
Do.	Fort Dodge	3,127.23	6,184 25	6,184 25	.....
Do.	Sioux City	33,132.42	61,129 73	61,129 73	.....
Total .....	.....	37,119.39	68,671 92	68,671 92	.....
Wisconsin	Menasha	2,970.13	3,812 68	3,812 68	.....
Do.	Falls of St. Croix	4,426.38	7,880 69	7,880 69	.....
Do.	Stevens' Point	2,913.66	3,692 12	3,423 21	268 91
Do.	La Crosse	5,340.06	7,075 07	7,075 07	.....
Do.	Bayfield	31,611.82	59,867 71	59,867 71	.....
Do.	Eau Claire	7,479.00	10,380 09	10,380 09	.....
Total .....	.....	54,741 05	92,708 36	92,439 45	268 91

* Excess

ber of acres entered under the homestead law of May 20, 1862, of commissions received under mechanic act of July 2, 1862, and commissions received by registers and receivers on the value commencing July 1, 1869, and ending June 30, 1870.

Quantity of land entered under homestead acts of May 20, 1862, and June 21, 1866, with aggregate of \$5 and \$10 payments required by section 2 of the acts; and also with aggregate of registers' and receivers' commissions, under section 6 of said act, and of act approved March 21, 1864, amendatory thereof, for the second half of the fiscal year ending June 30, 1870.				Aggregate disposed of for cash; also, bounty land scrip, and of cash under homestead act of 1862, and acts amendatory.		Quantity of land located in the second half of said fiscal year, with agricultural college scrip, act July 2, 1862, and registers' and receivers' commissions on value of land located.		Incidental expenses.
Area of homestead entries in acres.	Fees.	Amount of registers' and receivers' commissions.	Aggregate of fees and registers' and receivers' commissions.	Acres.	Amount.	Acres.	Amount.	Amount.
357.24	\$40	\$25 88	\$65 88	437.24	\$315 00			\$634 55
				3,207.40	5,675 89			572 88
				1,831.82	2,571 11			670 37
60,019.70	5,020	2,071 88	7,091 88	70,660.00	20,800 95	160.00	\$4 00	\$914 54
62,057.03	4,530	1,639 74	6,169 74	64,824.90	10,335 60	800.00	20 00	745 12
119,260.46	8,955	3,558 00	12,513 00	128,623.92	25,348 53	321.00	8 00	1,149 86
241,337.19	18,505	7,269 62	25,774 62	264,108.82	56,485 08	1,289.80	32 00	2,809 52
14,559.07	1,095	408 00	1,503 00	14,559.07	1,626 38			907 51
14,619.45	1,035	389 00	1,424 00	14,619.45	1,576 33			510 82
63,556.43	5,645	2,091 00	7,736 00	63,556.43	6,214 49			818 93
92,734.95	7,775	2,888 00	10,663 00	92,734.95	9,417 20			2,237 26
46,761.08	3,850	1,380 74	5,230 74	46,761.08	3,983 21			502 66
43,057.50	2,940	1,176 00	4,116 00	43,057.50	3,375 38			508 66
43,057.50	2,940	1,176 00	4,116 00	43,057.50	3,375 38			508 66
14,168.49	920	362 26	1,282 26	17,711.15	5,344 88			624 12
11,439.38	850	383 29	1,233 29	17,051.87	9,308 95			743 62
19,422.35	1,950	930 31	2,880 31	25,026.69	15,356 77			907 94
2,162.45	130	77 01	207 01	8,257.93	10,960 36			723 28
13,950.16	1,280	604 86	1,884 86	17,583.68	7,523 49			886 99
61,142.83	5,130	2,357 73	7,487 73	85,631.32	48,694 45			3,885 95
82,608.85	6,675	2,429 07	9,104 07	82,608.85	6,909 38			652 93
43,469.55	3,425	1,253 99	4,678 99	43,469.55	4,153 25			629 56
150,633.31	11,997	4,321 78	16,318 78	150,633.31	13,753 64			645 12
276,711.71	22,097	8,004 84	30,101 84	276,711.71	24,816 27			1,927 61
34,977.74	2,555	1,001 00	3,556 00	34,977.74	3,636 57			608 68
415.25	45	70 93	115 93	1,087.21	1,034 94			732 94
1,134.87	150	155 05	305 05	1,322.65	518 00			532 23
14,151.29	1,750	1,002 39	2,752 39	17,278.52	7,934 25	640.00	16 00	675 55
88,993.42	9,015	3,657 00	12,672 00	122,125.84	70,144 73	1,280.00	32 00	1,816 73
104,694.83	10,960	4,885 37	15,845 37	141,814.22	79,631 92	1,920.00	48 00	3,757 45
5,049.46	390	170 11	560 11	8,019.59	4,202 68			775 38
18,475.56	1,520	772 60	2,292 60	22,901.94	9,400 69			668 00
3,688.47	305	144 55	449 55	6,602.13	3,997 12			573 84
32,471.76	2,445	1,240 12	3,685 12	37,811.82	9,520 07			716 50
12,489.72	1,010	425 23	1,435 23	31,611.82	59,867 71			1,711 36
72,174.97	5,670	2,752 61	8,422 61	19,968.72	11,390 09			699 13
				126,916.62	98,378 36			5,144 21

payments.

No. 3.—Statement of public land sold, of cash and bounty land scrip received therefor,

States and Territories.	Land offices.	Quantity sold for cash and bounty land scrip, at and above the minimum price of \$1 25, and amount received for the same, for the second half of the fiscal year ending June 30, 1870.		Exhibit of the amount paid in cash and in bounty land scrip, respectively, for the second half of the fiscal year ending June 30, 1870, mentioned in the first column.	
		Acres.	Amount.	Cash.	Bounty land scrip.
California.....	San Francisco	25, 078. 08	\$37, 119 66	\$37, 119 66	.....
Do.....	Marysville.....	64, 067. 86	23, 680 75	83, 680 75	.....
Do.....	Humboldt.....	67, 122. 26	83, 902 80	83, 902 80	.....
Do.....	Stockton.....	27, 700. 52	36, 032 45	36, 032 45	.....
Do.....	Visalia.....	27, 627. 25	35, 703 75	35, 703 75	.....
Do.....	Sacramento.....	9, 490. 56	17, 898 17	17, 898 17	.....
Do.....	Los Angeles.....	1, 206. 15	1, 511 75	1, 511 75	.....
Total.....		222, 292. 68	295, 849 33	295, 849 33	.....
Nevada.....	Carson City.....	1, 405. 64	2, 116 46	2, 116 46	.....
Do.....	Austin.....	72. 49	410 00	410 00	.....
Do.....	Belmont.....				.....
Do.....	Aurora.....	841. 25	1, 051 56	1, 051 56	.....
Total.....		2, 319. 38	3, 578 02	3, 578 02	.....
Washington Ter'y.....	Olympia.....	23, 608. 62	29, 510 77	29, 510 77	.....
Do.....	Vancouver.....	10, 018. 77	12, 523 46	12, 523 46	.....
Total.....		33, 627. 39	42, 034 23	42, 034 23	.....
Minnesota.....	Taylor's Falls.....	4, 494. 82	6, 201 21	6, 201 21	.....
Do.....	St. Cloud.....	16, 916. 33	21, 904 53	21, 904 53	.....
Do.....	Jackson.....	4, 059. 20	6, 150 61	6, 150 61	.....
Do.....	New Ulm.....	4, 126. 90	8, 807 31	8, 807 31	.....
Do.....	Litchfield.....	2, 772. 63	6, 317 43	6, 317 43	.....
Do.....	Du Luth.....	12, 094. 84	17, 090 26	17, 090 26	.....
Do.....	Alexandria.....	70, 060. 36	87, 587 93	87, 587 93	.....
Total.....		114, 525. 08	154, 059 28	154, 059 28	.....
Oregon.....	Oregon City.....	4, 916. 48	6, 137 56	6, 137 56	.....
Do.....	Roseburg.....	16, 047. 06	20, 252 42	20, 252 42	.....
Do.....	Le Grand.....	975. 81	1, 241 75	1, 241 75	.....
Total.....		21, 939. 35	27, 631 73	27, 631 73	.....
Kansas.....	Topeka.....	20, 823. 82	44, 848 14	44, 848 14	.....
Do.....	Junction City.....	81, 967. 98	109, 202 20	109, 202 20	.....
Do.....	Humboldt.....	47, 094. 89	60, 666 86	60, 666 86	.....
Total.....		149, 886. 69	214, 717 20	214, 717 20	.....
Nebraska.....	West Point.....	28, 323. 25	40, 104 68	40, 104 68	.....
Do.....	Beatrice.....	146, 268. 14	183, 458 94	183, 458 94	.....
Do.....	Lincoln.....	23, 006. 12	52, 817 17	52, 817 17	.....
Do.....	Dakota City.....	117, 064. 02	146, 330 21	146, 330 21	.....
Do.....	Grand Island.....	9, 560. 62	23, 108 94	23, 108 94	.....
Total.....		324, 227. 15	445, 819 94	445, 819 94	.....
New Mexico.....	Santa Fe.....				.....
Dakota Territory.....	Vermillion.....	21, 757 00	27, 196 32	27, 196 32	.....
Colorado Territory.....	Denver City.....	45, 591. 91	58, 939 91	58, 939 91	.....
Do.....	Fair Play.....	15. 36	85 00	85 00	.....
Do.....	Central City.....	2, 141. 11	3, 727 31	3, 727 31	.....
Total.....		47, 748. 38	62, 752 22	62, 752 22	.....

number of acres entered under the homestead law of May 20, 1862, &c.—Continued.

Quantity of land entered under homestead acts of May 20, 1862, and June 21, 1866, with aggregate of \$5 and \$10 payments required by section 2 of the acts; and also with aggregate of registers' and receivers' commissions under section 6 of said act, and of act approved March 21, 1864, amendatory thereof, for the second half of the fiscal year ending June 30, 1870.				Aggregate disposed of for cash; also, bounty land scrip, and of cash under homestead act of 1862, and acts amendatory.		Quantity of land located in the second half of said fiscal year, with agricultural college scrip, act July 2, 1862, and registers' and receivers' commissions on value of land located.		Incidental expenses.
Area of homestead entries in acres.	Fees.	Amount of registers' and receivers' commissions.	Aggregate of fees and registers' and receivers' commissions.	Acres.	Amount.	Acres.	Amount.	Amount.
10, 674.30	\$693	\$460 00	\$1, 153 00	35, 752.38	\$37, 812 66	1, 755.32	\$44 00	\$1, 561 81
5, 303.46	420	346 38	766 38	69, 371.32	84, 100 75			2, 718 60
8, 281.71	520	341 67	861 67	75, 403.97	84, 422 80	5, 120.00	128 00	2, 629 09
12, 568.52	830	619 82	1, 449 82	40, 269.04	36, 862 45			1, 749 29
2, 846.22	215	169 00	384 00	30, 473.47	35, 918 75	8, 712.50	220 00	1, 661 46
1, 212.20	160	138 00	298 00	10, 702.76	18, 058 17			1, 035 44
631.39	40	24 00	64 00	1, 837.54	1, 551 75	1, 920.00	48 00	633 32
41, 517.80	2, 878	2, 098 87	4, 976 87	263, 810.48	298, 727 33	17, 507.82	440 00	11, 992 01
2, 230.04	150	106 00	256 00	3, 635.68	2, 266 46			626 80
400.00	25	15 00	40 00	472.49	435 00			508 20
3, 120.00	200	116 00	316 00	3, 961.25	1, 251 56			500 00
5, 750.04	375	237 00	612 00	8, 069.42	3, 953 02			773 50
10, 881.82	690	518 64	1, 208 64	34, 490.44	30, 200 77	3, 993.67	100 00	2, 403 50
14, 393.47	1, 065	764 89	1, 829 89	24, 412.24	13, 588 46			1, 374 45
25, 275.29	1, 755	1, 283 53	3, 038 53	58, 902.68	43, 789 23	3, 993.67	100 00	974 36
14, 502.93	1, 270	531 84	1, 801 84	18, 997.75	7, 471 21	1, 120.00	28 00	2, 348 81
35, 273.81	2, 685	1, 232 98	3, 917 98	52, 190.14	24, 589 53	11, 346.78	284 00	624 02
24, 472.42	2, 175	1, 525 22	3, 700 22	28, 531.62	8, 325 61			943 08
23, 508.34	2, 490	1, 455 51	3, 945 51	27, 635.24	11, 297 31			696 37
28, 106.37	2, 490	1, 367 98	3, 857 98	30, 879.00	8, 807 43			910 82
4, 679.33	380	146 00	526 00	16, 774.17	17, 470 26	2, 203.80	56 00	754 94
38, 565.45	2, 490	989 85	3, 479 85	108, 625.81	90, 077 93	17, 978.08	448 00	891 80
169, 108.65	13, 980	7, 249 38	21, 229 38	283, 633.73	168, 039 28	32, 648.66	816 00	2, 519 72
24, 489.01	1, 640	1, 027 36	2, 667 36	29, 405.49	7, 777 56			7, 340 75
28, 064.14	1, 875	1, 163 13	3, 038 13	44, 111.20	22, 127 42	2, 708.90	68 00	931 65
3, 944.71	250	154 04	404 04	4, 920.52	1, 491 75			1, 786 42
56, 497.86	3, 765	2, 344 53	6, 109 53	78, 437.21	31, 396 73	2, 708.90	68 00	534 84
14, 732.71	1, 865	803 63	2, 668 63	35, 556.53	46, 713 14			3, 252 91
405, 595.47	29, 195	11, 849 53	41, 044 53	487, 563.45	138, 397 20	902.75	24 00	2, 186 96
48, 092.08	3, 745	1, 613 87	5, 358 87	95, 186.97	64, 411 86	480.00	12 00	2, 686 51
468, 420.26	34, 805	14, 267 03	49, 072 03	618, 306.95	249, 522 20	1, 382.75	36 00	1, 856 82
36, 621.35	3, 025	1, 375 25	4, 400 25	64, 949.60	43, 129 68			6, 730 29
56, 207.66	3, 970	1, 672 63	5, 642 63	202, 475.80	187, 428 94			1, 436 58
95, 941.63	12, 035	4, 963 57	16, 998 57	118, 947.75	64, 852 17			3, 570 99
42, 237.79	2, 670	1, 086 00	3, 756 00	159, 301.81	149, 000 21	960.00	24 00	1, 646 34
25, 507.01	3, 195	1, 302 60	4, 497 60	35, 067.63	26, 303 94			2, 358 91
256, 515.44	24, 895	10, 399 45	35, 294 45	580, 742.59	470, 714 94	960.00	24 00	1, 407 36
								448 88
46, 781.54	2, 945	1, 219 56	4, 164 56	68, 538.54	30, 141 32			1, 168 42
23, 427.02	1, 970	1, 346 00	3, 316 00	69, 018.93	60, 909 91	20, 842.32	516 00	1, 745 78
				15.36	85 00			576 70
2, 229.32	160	96 00	256 00	4, 370.43	3, 887 31			763 04
25, 656.34	2, 130	1, 442 00	3, 572 00	73, 404.72	64, 882 22	20, 842.32	516 00	3, 085 52

No. 3.—Statement of public lands sold, of cash and bounty land scrip received therefor,

States and Territories.	Land offices.	Quantity sold for cash and bounty land scrip, at and above the minimum price of \$1 25, and amount received for the same, for the second half of the fiscal year ending June 30, 1870.		Exhibit of the amount paid in cash and in bounty land scrip, respectively, for the second half of the fiscal year ending June 30, 1870, mentioned in the first column.	
		Acres.	Amount.	Cash.	Bounty land scrip.
Idaho Territory.....	Boisé City	409. 19	\$511 50	\$511 50	.....
Do.....	Lewiston .....				.....
Total.....		409. 19	511 50	511 50	.....
Montana Territory..	Helena.....	8, 571. 28	10, 759 92	10, 759 92	.....
Arizona Territory..	Prescott .....				.....
Utah Territory	Salt Lake City.....	11, 792. 23	14, 740 28	14, 740 28	.....

DEPARTMENT OF THE INTERIOR, *General Land Office, October 27, 1870.*

number of acres entered under the homestead law of May 20, 1862, &c.—Continued.

Quantity of land entered under homestead acts of May 20, 1862, and June 21, 1866, with aggregate of \$5 and \$10 payments required by section 2 of the acts; and also with aggregate of registers' and receivers' commissions, under section 6 of said act, and of act approved March 21, 1864, amendatory thereof, for the second half of the fiscal year ending June 30, 1870.				Aggregate disposed of for cash; also bounty land scrip, and of cash under homestead act of 1862, and acts amendatory.		Quantity of land located in the second half of said fiscal year, with agricultural college scrip, act July 2, 1862, and registers' and receivers' commissions on value of land located.		Incidental expenses.
Area of homestead entries in acres.	Fees.	Amount of registers' and receivers' commissions.	Aggregate of fees and registers' and receivers' commissions.	Acres.	Amount.	Acres.	Amount.	Amount.
2, 439. 33	\$170	\$84 50	\$254 50	2, 848. 52	\$681 50	.....	.....	\$669 22 735 00
2, 439. 33	170	84 50	254 50	2, 848. 52	681 50	.....	.....	1, 404 22
17, 954. 71	920	682 00	1, 602 00	26, 525. 99	11, 679 92	.....	.....	1, 055 43
.....	.....	.....	.....	.....	.....	.....	.....	250 00
20, 150. 37	1, 425	829 50	2, 254 50	31, 942. 60	16, 165 28	.....	.....	1, 023 88

JOS. S. WILSON, *Commissioner.*

No. 3.—Statement of public lands sold, of cash and bounty land scrip received therefor.

RECAPIT

States and Territories.	Quantity sold for cash and bounty land scrip at and above the minimum price of \$1 25, and amount received for the same, for the second half of the fiscal year ending June 30, 1870.		Exhibit of the amount paid in cash and in bounty land scrip, respectively, for the second half of the fiscal year ending June 30, 1870, mentioned in the first column.	
	Acres.	Amount.	Cash.	Military scrip.
Ohio	80.00	\$275 00	\$275 00	.....
Indiana	3,207.40	5,675 89	5,675 89	.....
Illinois	1,831.82	2,571 11	2,571 11	.....
Missouri	22,771.63	37,980 08	37,980 08	.....
Alabama .....	.....	*1,642 20	1,642 20	.....
Mississippi .....	.....	*133 21	133 21	.....
Louisiana .....	.....	*435 38	435 38	.....
Michigan	24,488.49	43,564 45	40,559 77	\$3,004 68
Arkansas .....	.....	*2,719 27	2,719 27	.....
Florida .....	.....	*1,081 57	1,081 57	.....
Iowa	37,119.39	68,671 92	68,671 92	.....
Wisconsin	54,741.05	92,708 36	92,439 45	268 91
California	222,292.68	295,849 33	295,849 33	.....
Nevada	2,319.38	3,578 02	3,578 02	.....
Washington Territory	33,627.39	42,034 23	42,034 23	.....
Minnesota	114,525.08	154,059 28	154,059 28	.....
Oregon	21,939.35	27,631 73	27,631 73	.....
Kansas	149,886.69	214,717 20	214,717 20	.....
Nebraska	324,227.15	445,819 94	445,819 94	.....
New Mexico .....	.....	.....	.....	.....
Dakota Territory	21,757.00	27,196 32	27,196 32	.....
Colorado Territory	47,748.38	62,752 22	62,752 22	.....
Idaho Territory	409.19	511 50	511 50	.....
Montana Territory	8,571.28	10,759 92	10,759 92	.....
Arizona Territory .....	.....	.....	.....	.....
Utah Territory	11,792.23	14,740 28	14,740 28	.....
Total	1,103,335.58	1,557,108 41	1,553,834 82	3,273 59

To which add number of acres located with agricultural scrip and commissions
Also, commissions received on homestead entries as shown in column No. 3 of

* Excess

number of acres entered under the homestead law of May 20, 1862, &c.—Continued.

ULATION.

Quantity of land entered under homestead acts of May 20, 1862, and June 21, 1866, with aggregate of \$5 and \$10 payments required by section 2 of the acts; and also with aggregate of commissions of registers and receivers, under section 6 of said act, and of act approved March 21, 1864, amendatory thereof, for the second half of the fiscal year ending June 30, 1870.				Aggregate disposed of for cash, also bounty land scrip, and of cash under homestead act of 1862, and acts amendatory.		Quantity of land located in the second half of said fiscal year with agricultural college scrip, act 2 July, 1862, and registers' and receivers' commissions on value of land located.		Incidental expenses.
Area of homestead entries in acres.	Aggregate of \$5 & \$10 payments.	Amount of registers' and receivers' commissions.	Aggregate of fees and registers' and receivers' commissions.	Acres.	Amount.	Acres.	Amount.	Amount.
357.24	\$40 00	\$25 88	\$65 88	437.24	\$315 00			\$634 55
				3,207.40	5,675 89			572 88
				1,831.82	2,571 11			670 37
241,337.19	18,505	7,269 62	25,774 62	264,108.82	56,485 08	1,280.00	\$32 00	2,809 52
92,734.95	7,775	2,888 00	10,663 00	92,734.95	9,417 20			2,237 26
46,761.08	3,850	1,380 74	5,230 74	46,761.08	3,983 21			502 66
43,057.50	2,940	1,176 00	4,116 00	43,057.50	3,375 38			508 66
61,142.83	5,130	2,357 73	7,487 73	85,631.32	48,694 45			3,885 95
276,711.71	22,097	8,004 84	30,101 84	276,711.71	24,816 27			1,927 61
34,977.74	2,555	1,001 00	3,556 00	34,977.74	3,636 57			608 68
104,694.83	10,960	4,885 37	15,845 37	141,814.22	79,631 92	1,920.00	48 00	3,757 45
72,174.97	5,670	2,752 61	8,422 61	126,916.02	98,378 36			5,144 21
41,517.80	2,878	2,098 87	4,976 87	263,810.48	298,727 33	17,507.82	440 00	11,992 01
5,750.04	375	237 00	612 00	8,069.42	3,953 02			2,408 50
25,275.29	1,755	1,283 53	3,038 53	58,902.68	43,789 23	3,993.67	100 00	2,348 81
169,108.65	13,980	7,249 38	21,229 38	283,633.73	168,039 28	32,648.66	816 00	7,340 75
56,497.86	3,765	2,344 53	6,109 53	78,437.21	31,396 73	2,708.90	68 00	3,252 91
468,420.26	34,805	14,267 03	49,072 03	618,306.95	249,522 20	1,382.75	36 00	6,730 29
256,515.44	24,895	10,399 45	35,294 45	580,742.59	470,714 94	960.00	24 00	10,430 18
								448 88
46,781.54	2,945	1,219 56	4,164 56	68,538.54	30,141 32			1,168 42
25,656.34	2,130	1,442 03	3,572 00	73,404.72	64,882 22	20,842.32	516 00	3,085 52
2,439.33	170	84 50	254 50	2,848.52	681 50			1,404 22
17,954.71	920	682 00	1,602 00	26,525.99	11,679 92			1,055 43
								250 00
20,150.37	1,425	829 50	2,254 50	31,942.60	16,165 28			1,023 68
2,110,017.67	169,565	73,879 14	243,444 14	3,213,353.25	1,726,673 41	83,244.12	2,080 00	76,199 60
thereon				83,244.12	2,080 00			
section 3					73,879 14			
				3,296,597.37	1,802,632 55			

payments.

JOS. S. WILSON, *Commissioner.*

No. 4.—*Summary for the fiscal year ending June 30, 1870, showing the number of acres disposed of and June 21, 1866, with aggregate of \$5 and \$10 homestead payments and homestead commis-*

States and Territories.	Quantity sold for cash and bounty land scrip at and above the minimum price of \$1 25, and amount received for the same, for the fiscal year ending June 30, 1870.		Exhibit of the amount paid for in cash and in bounty land scrip, respectively, for the fiscal year ending June 30, 1870, mentioned in the first column.	
	Acres.	Amount.	Cash.	Military scrip.
Ohio.....	240.00	\$475 00	\$475 00	.....
Indiana.....	3,918.25	6,564 45	6,564 45	.....
Illinois.....	2,846.21	4,044 45	4,044 45	.....
Missouri.....	38,536.81	66,016 03	65,783 68	\$232 35
Alabama.....	.....	*2,130 39	2,130 39	.....
Mississippi.....	.....	*501 25	501 25	.....
Louisiana.....	.....	*1,211 39	1,211 39	.....
Michigan.....	81,835.39	189,576 70	171,938 03	8,638 67
Arkansas.....	.....	*4,217 77	4,217 77	.....
Florida.....	.....	*2,118 06	2,118 06	.....
Iowa.....	142,518.06	239,391 90	239,391 90	.....
Wisconsin.....	133,264.77	210,573 10	209,674 51	898 59
California.....	445,961.61	608,009 64	608,009 64	.....
Nevada.....	5,115.03	7,861 21	7,861 21	.....
Washington Territory.....	62,266.34	77,832 89	77,832 89	.....
Minnesota.....	170,617.68	236,589 58	236,589 58	.....
Oregon.....	44,708.22	57,354 93	57,354 93	.....
Kansas.....	226,403.69	321,537 33	321,474 83	62 50
Nebraska.....	611,135.28	831,719 52	828,487 59	3,231 93
New Mexico Territory.....	.....	.....	.....	.....
Dakota Territory.....	37,398.41	46,748 14	46,748 14	.....
Colorado Territory.....	103,038.45	155,970 80	155,970 80	.....
Idaho Territory.....	2,709.47	3,386 90	3,386 90	.....
Montana Territory.....	16,878.59	21,091 55	21,091 55	.....
Arizona Territory.....	.....	.....	.....	.....
Utah Territory.....	30,123.55	37,754 41	37,754 41	.....
Total.....	2,159,515.81	3,123,677 39	3,110,613 35	13,064 04

To which add number of acres located with agricultural scrip, and commissions thereon....
Also, commissions received on homestead entries, as shown in column No. 3, of section three,

for cash, with bounty land scrip, by entry under the homestead laws of May 20, 1862, March 21, 1864
sions; also, locations with agricultural college and mechanic scrip, under act of July 2, 1862.

Quantity of land entered under homestead acts of May 20, 1862, and June 21, 1866, with aggregate of \$5 and \$10 payments, required by section 2 of the acts; and also with aggregate of commissions of registers and receivers, under section 6 of said act, and of act approved March 21, 1864, amendatory thereof, for the fiscal year ending June 30, 1870.				Aggregate disposed of for cash, also bounty land scrip, and of cash under homestead act of 1862, and acts amendatory.		Quantity of land located in the said fiscal year with agricultural college scrip, act 2d July, 1862, and registers' and receivers' commissions on value of land located.		Incidental expenses.
Area of homestead entries in acres.	Aggregate of \$5 and \$10 payments.	Amount of registers' and receivers' commissions.	Aggregate of fees and registers' and receivers' commissions.	Acres.	Amount.	Acres.	Amount.	Amount.
439.26	\$50	\$28 92	\$78 92	679.26	\$525 00	-----	-----	\$1,250 01
120.00	10	3 00	13 00	4,038.25	6,574 45	-----	-----	1,419 97
402,261.89	31,105	12,065 96	43,170 96	2,846.21	4,044 45	-----	-----	1,499 82
243,833.26	19,660	7,246 00	26,906 00	440,798.70	97,121 03	1,920.00	\$44 00	5,439 67
100,805.80	7,755	2,807 08	10,562 08	243,833.26	21,790 39	-----	-----	4,468 23
92,254.72	6,220	2,486 00	8,706 00	100,805.80	8,256 25	-----	-----	1,105 98
121,797.80	10,610	4,902 83	15,512 83	92,254.72	7,431 39	-----	-----	1,931 05
431,797.51	34,782	12,548 30	47,330 30	203,633.19	191,186 70	-----	-----	15,970 36
60,778.01	5,240	2,053 00	7,293 00	431,797.51	38,999 77	-----	-----	3,526 99
190,013.50	20,210	8,903 73	29,113 73	60,778.01	7,358 06	-----	-----	1,129 40
156,496.49	12,210	5,671 35	17,881 35	332,531.56	259,601 90	18,237.64	456 00	9,474 04
67,694.31	4,763	2,693 90	8,456 90	289,761.26	222,783 10	-----	-----	11,618 32
8,003.16	525	363 00	888 00	513,655.92	612,772 64	37,656.90	944 00	24,430 86
58,697.41	3,870	2,889 41	6,759 41	13,118.19	8,386 21	-----	-----	4,558 36
339,465.48	28,955	15,713 31	44,668 31	120,963.75	81,702 89	5,272.91	132 00	4,601 91
91,880.67	6,100	3,878 44	9,978 44	510,083.16	265,544 58	63,192.91	1,599 78	13,637 49
647,185.71	49,325	20,295 83	69,620 83	136,588.89	63,454 93	4,308.90	108 00	6,478 55
456,439.81	42,445	17,688 69	60,133 69	873,589.40	370,862 33	31,980.62	760 00	11,388 29
-----	-----	-----	-----	1,067,575.09	874,164 52	2,720.00	68 00	18,708 94
89,587.51	5,645	2,308 34	7,953 34	126,985.92	52,393 14	160.00	4 00	948 88
68,986.59	6,070	4,077 50	10,147 50	172,025.04	162,040 80	27,398.33	680 00	2,275 32
7,365.90	500	281 00	781 00	10,075.37	3,886 90	-----	-----	7,245 60
33,458.79	1,900	1,268 50	3,168 50	50,337.38	22,991 55	-----	-----	2,086 29
-----	-----	-----	-----	-----	-----	-----	-----	1,665 72
29,546.47	2,075	1,209 90	3,284 90	59,670.02	39,829 41	-----	-----	750 00
-----	-----	-----	-----	-----	-----	-----	-----	2,478 81
3,698,910.05	300,025	132,383 99	432,408 99	5,858,425.86	3,423,702 35	192,848.21	4,795 78	161,388 88
-----	-----	-----	-----	192,848.21	4,795 78	-----	-----	-----
-----	-----	-----	-----	-----	132,383 99	-----	-----	-----
-----	-----	-----	-----	6,051,274.07	3,560,882 16	-----	-----	-----

payments.

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JOS. S. WILSON, *Commissioner.*

SWAMP LANDS.

No. 5.—Statement exhibiting the quantity of lands selected for the several States under acts of Congress approved March 2, 1849, September 28, 1850, and March 12, 1860, up to and ending September 30, 1870.

States.	4th quarter, 1869.	1st quarter, 1870.	2d quarter, 1870.	3d quarter, 1870.	Year ending June 30, 1870.	Total since date of grant.
	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>
Ohio.....						54,438.14
Indiana.....						1,354,732.50
Illinois.....						3,267,470.65
Missouri.....						4,604,448.75
Alabama.....						479,514.44
Mississippi.....						3,070,645.29
Louisiana, (act of 1849).....						10,774,978.82
Louisiana, (act of 1850).....						543,359.13
Michigan.....						7,273,724.72
Arkansas.....						8,652,432.93
Florida.....						11,790,637.46
Wisconsin.....				132,413.09		4,333,082.67
Iowa.....						2,583,509.72
California.....	190.00		23,637.89	14,453.92	23,827.89	952,166.64
Oregon.....						
Minnesota.....	44,668.91		73,785.08	250,111.84	118,453.99	1,121,725.83
Total.....	44,858.91		97,422.97	396,978.85	142,281.88	60,856,847.69

No. 6.—Statement exhibiting the quantity of land approved to the several States under the acts of Congress approved March 2, 1849, September 28, 1850, and March 12, 1860, up to and ending September 30, 1870.

States.	4th quarter, 1869.	1st quarter, 1870.	2d quarter, 1870.	3d quarter, 1870.	Year ending June 30, 1870.	Total since date of grant.
	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>
Ohio.....						25,640.71
Indiana.....						1,263,733.28
Illinois.....			80.00	100.00	80.00	1,489,220.01
Missouri.....		1,098.27			1,178.27	4,331,936.26
Alabama.....	158,417.41	125,190.40			397,839.27	400,434.78
Mississippi.....						3,068,642.31
Louisiana, (act of 1849).....						8,192,305.64
Louisiana, (act of 1850).....						237,949.09
Michigan.....		120.00			120.00	5,691,878.66
Arkansas.....			3,297.38	167.32	3,297.38	7,287,227.83
Florida.....						10,901,007.76
Wisconsin.....						3,029,738.55
Iowa.....	445.07	2,529.62	347.95	369.38	3,776.04	867,994.42
California.....	190.00		23,637.89	14,453.92	23,970.89	807,854.96
Oregon.....						
Minnesota.....			44,337.02		44,337.02	769,371.15
Total.....	159,052.48	128,938.29	71,700.24	15,090.63	474,598.87	48,364,935.41

No. 7.—Statement exhibiting the quantity of land patented to the several States under the acts of Congress approved September 28, 1850, and March 12, 1860, and also the quantity certified to Louisiana under act approved March 2, 1849.

States.	4th quarter, 1869.	1st quarter, 1870.	2d quarter, 1870.	3d quarter, 1870.	Year ending June 30, 1870.	Total since date of grant.
	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>
Ohio						25,640.71
Indiana					41.00	*1,256,488.56
Illinois		1,108.83			1,183.93	†1,449,645.85
Missouri	217.64				407.14	3,152,396.31
Alabama		78,492.26		199,995.89	192,723.72	392,719.61
Mississippi						2,681,383.16
Louisiana, (act of 1849)						8,192,305.64
Louisiana, (act of 1850)			15,894.28		15,894.28	215,492.35
Michigan	18,983.93				19,663.93	‡5,836,788.82
Arkansas				1,627.67		6,012,984.70
Florida						10,644,468.04
Wisconsin	286.70				5,533.18	§2,973,057.26
Iowa	7,231.03	1,044.60	4,603.89	320.00	19,033.25	||1,129,248.36
California	333.00			105,644.39	403,253.38	732,929.48
Minnesota						717,383.57
Total	27,052.30	80,645.69	20,498.17	307,587.95	657,733.81	45,412,932.42

* 4,880.20 acres of this contained in indemnity patents under act of March 2, 1855.

† 1,108.83 acres of this contained in indemnity patents under act of March 2, 1855.

‡ 18,823.93 acres of this contained in indemnity patents under act of March 2, 1855.

§ 39,910.75 acres of this contained in indemnity patents under act of March 2, 1855.

|| 320,908.23 acres of this contained in indemnity patents under act of March 2, 1855.

JOS. S. WILSON, *Commissioner.*

DEPARTMENT OF THE INTERIOR,
General Land Office, October 27, 1870.

No. 8.—Statement showing the condition of the State selections under the act of September 4, 1841, on the 30th day of June, 1870.

States.	Number of acres to which each State was entitled un- der the eighth sec- tion of the act of September 4, 1841.	Number of acres ap- proved up to June 30, 1870.	Number of acres re- maining to each State to be select- ed on the 1st of July, 1870.
Illinois	209,085.50	*209,060.05	25.45
Missouri	500,000.00	500,000.00	
Alabama	97,469.17	*97,469.17	
Mississippi	500,000.00	500,000.00	
Louisiana	500,000.00	482,166.97	17,833.03
Michigan	500,000.00	498,638.54	1,361.46
Arkansas	500,000.00	499,880.03	119.97
Florida	499,990.00	450,823.82	49,166.18
Iowa	500,000.00	500,000.00	
Wisconsin	500,000.00	499,973.87	26.13
California	500,000.00	256,562.27	243,437.73
Kansas	500,000.00	495,552.20	4,447.80
Minnesota	500,000.00	483,822.60	16,177.40
Oregon	500,000.00	431,576.42	68,423.58
Nevada	500,000.00		500,000.00
Nebraska	500,000.00	359,708.06	140,291.94
Total	7,306,544.67	6,265,234.00	1,041,310.67

* The States of Illinois and Alabama received grants under prior acts, which with the quantities here given make up the quantity of 500,000 acres.

DEPARTMENT OF THE INTERIOR,
General Land Office, October 27, 1870.

JOS. S. WILSON, *Commissioner.*

No. 9.—Condition of bounty land business under acts of 1847, 1850, 1852, and 1855, showing the issues and locations from the commencement of operations under said acts to June 30, 1870.

Grade of warrants.	Number issued.	Acres embraced thereby.	Number located.	Acres embraced thereby.	No. outstanding.	Acres embraced thereby.
<i>Act of 1847.</i>						
One hundred and sixty acres	80, 646	12, 903, 360	78, 596	12, 575, 360	2, 050	328, 000
Forty acres	7, 583	303, 320	7, 021	280, 840	562	22, 480
Total	88, 229	13, 206, 680	85, 617	12, 856, 200	2, 612	350, 480
<i>Act of 1850.</i>						
One hundred and sixty acres	27, 433	4, 390, 080	26, 590	4, 254, 400	848	135, 680
Eighty acres	57, 708	4, 616, 640	55, 729	4, 458, 320	1, 979	158, 320
Forty acres	103, 968	4, 158, 720	99, 802	3, 992, 080	4, 166	166, 640
Total	189, 114	13, 165, 440	182, 121	12, 704, 800	6, 993	460, 640
<i>Act of 1852.</i>						
One hundred and sixty acres	1, 222	195, 520	1, 189	190, 240	33	5, 280
Eighty acres	1, 698	135, 840	1, 650	132, 000	48	3, 840
Forty acres	9, 063	362, 520	8, 852	354, 080	211	8, 440
Total	11, 983	693, 880	11, 691	676, 320	292	17, 960
<i>Act of 1855.</i>						
One hundred and sixty acres	110, 600	17, 600, 000	100, 469	16, 075, 040	9, 531	1, 524, 960
One hundred and twenty acres	96, 710	11, 605, 200	88, 061	10, 567, 320	8, 659	1, 039, 080
One hundred acres	6	600	5	500	1	100
Eighty acres	49, 305	3, 944, 400	46, 560	3, 724, 800	2, 745	219, 600
Sixty acres	358	21, 480	292	17, 520	66	3, 960
Forty acres	532	21, 280	445	17, 800	87	3, 480
Ten acres	5	50	3	30	2	20
Total	256, 916	33, 193, 010	235, 835	30, 403, 010	21, 091	2, 791, 200
<i>Summary.</i>						
Act of 1847	88, 229	13, 206, 680	85, 617	12, 856, 200	2, 612	350, 480
Act of 1850	189, 114	13, 165, 440	182, 121	12, 704, 800	6, 993	460, 640
Act of 1852	11, 983	693, 880	11, 691	676, 320	292	17, 960
Act of 1855	256, 916	33, 193, 010	235, 835	30, 403, 010	21, 091	2, 791, 200
Total	546, 242	60, 259, 010	515, 264	56, 640, 330	30, 988	3, 620, 280

JOS. S. WILSON, *Commissioner.*

DEPARTMENT OF THE INTERIOR,
General Land Office, October 27, 1870.

No. 10.—*Agricultural selections within certain States, and also scrip locations under agricultural and mechanic act of July 2, 1862, and supplements of April 14, 1864, and July 23, 1866.*

Land districts.	Quantity selected in place for the fiscal year ending June 30, 1870.	Quantity located for the fiscal year ending June 30, 1870.	Quantity located in July and August, 1870.
MISSOURI.	Acres.	Acres.	Acres.
Boonville		640. 00	
Ironton		800. 00	
Springfield		480. 00	
Total		1, 920. 00	
IOWA.			
Fort Des Moines			
Council Bluffs		640. 00	
Fort Dodge		17, 597. 64	3, 660. 24
Sioux City			
Total		18, 237. 64	3, 660. 24
MINNESOTA.			
Taylor's Falls		6, 240. 00	
St. Cloud		12, 146. 78	4, 469. 88
Jackson			880. 00
New Ulm			
Litchfield			
Du Luth		5, 390. 34	799. 89
Alexandria		39, 415. 79	638. 92
Total		63, 192. 91	6, 788. 69
KANSAS.			
Topeka			2, 400. 00
Junction City		31, 500. 62	17, 350. 18
Humboldt		480. 00	154. 50
Total		31, 980. 62	19, 904. 68
NEBRASKA.			
West Point			
Beatrice			
Lincoln		320. 00	
Dakota City		2, 400. 00	
Grand Island			
Total		2, 720. 00	
OREGON.			
Oregon City			
Roseburg	74, 037. 54	4, 308. 90	320. 00
Le Grand			
Total	74, 037. 54	4, 308. 90	320. 00
CALIFORNIA.			
San Francisco		19, 344. 40	
Marysville			
Humboldt		5, 120. 00	
Stockton			
Visalia		11, 272. 50	
Sacramento			
Los Angeles		1, 920. 00	
Total		37, 656. 90	

No. 10.—*Agricultural selections, &c.*—Continued.

Land districts.	Quantity selected in place for the fiscal year ending June 30, 1870.	Quantity located for the fiscal year ending June 30, 1870.	Quantity located in July and August, 1870.
WASHINGTON TERRITORY.	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>
Olympia.....		5,272.91	648.54
Vancouver.....			
Total.....		5,272.91	648.54
COLORADO TERRITORY.			
Denver City.....		27,398.33	960.00
Fair Play.....			
Central City.....			
Total.....		27,398.33	960.00
RECAPITULATION.			
Missouri.....		1,920.00	
Iowa.....		18,237.64	3,660.24
Minnesota.....		63,192.91	6,788.69
Kansas.....		31,980.62	19,904.68
Nebraska.....		2,720.00	
Oregon.....	74,037.54	4,308.90	320.00
California.....		37,656.90	
Washington Territory.....		5,272.91	648.54
Colorado Territory.....		27,398.33	960.00
Total.....	74,037.54	192,688.21	32,282.15

DEPARTMENT OF THE INTERIOR,
General Land Office, October 27 1870.

JOS. S. WILSON, *Commissioner.*

No. 11.—Statement exhibiting land concessions by acts of Congress to States for canal purposes from the year 1827 to June 30, 1870.

States.	Date of laws.	Statutes.	Page.	Name of canal.	Total number of acres granted.
Indiana.....	Mar. 2, 1827	4	236	} Wabash and Erie Canal	1, 439, 279
Do.....	Feb. 27, 1841	5	414		
Do.....	Mar. 3, 1845	5	731		
Ohio.....	Mar. 2, 1827	4	236	} Wabash and Erie Canal	266, 535
Do.....	June 30, 1834	4	716		
Do.....	May 24, 1828	4	305		
Do (sec. 5)	May 24, 1828	4	306	Miami and Dayton Canal.....	333, 826
Illinois.....	Mar. 2, 1827	4	234	General canal purposes.....	500, 000
				Canal to connect the waters of the Illinois River with those of Lake Michigan.....	290, 915
Wisconsin...	June 18, 1838	5	245	Milwaukee and Rock River Canal.....	125, 431
Do.....	Apr. 10, 1866	14	39	Breakwater and harbor and ship canal	200, 000
Michigan.....	Aug. 26, 1852	10	35	St. Mary Ship Canal.....	750, 000
Do.....	Mar. 3, 1865	13	519	Portage Lake and Lake Superior Ship Canal..	200, 000
Do.....	July 3, 1866	14	81	Portage Lake and Lake Superior Ship Canal..	200, 000
Do.....	July 3, 1866	14	80	Ship canal to connect the waters of Lake Superior with the lake known as Lac La Belle.	100, 000

RECAPITULATION.

Indiana.....	1, 439, 279
Ohio.....	1, 100, 361
Illinois.....	290, 915
Wisconsin.....	325, 431
Michigan.....	1, 250, 000
Total quantity of acres granted	4, 405, 986

JOS. S. WILSON, *Commissioner.*

DEPARTMENT OF THE INTERIOR,
General Land Office, October 27, 1870.

No. 12.—Statement exhibiting land concessions by acts of Congress to States and corporations for railroad and military wagon road purposes from the year 1850 to June 30, 1870.

States.	Date of laws.	Statutes.	Page.	Name of road.	Mile limits.	Number of acres certified up to June 30, 1869.	Number of acres certified for the year ending June 30, 1870.	Estimated quantities inuring under the grants.
Illinois	Sept. 20, 1850	9	466	Illinois Central	6 and 15	2,505,053.00	—	2,505,053.00
Do	Sept. 20, 1850	9	466	Mobile and Chicago	6 and 15	—	—	—
Mississippi*	Sept. 20, 1850	9	466	Mobile and Ohio River	6 and 15	737,130.29	—	1,004,640.00
Do	Aug. 11, 1856	11	30	Southern Railroad	6 and 15	171,550.00	—	404,890.00
Do	Aug. 11, 1856	11	30	Gulf and Ship Island Railroad	6 and 15	—	—	682,800.00
Alabama*	Sept. 20, 1850	9	466	Mobile and Ohio River	6 and 15	419,538.44	—	682,800.00
Do	May 17, 1856	11	15	Alabama and Florida	6 and 15	394,532.99	—	419,530.00
Do	May 17, 1856	11	15	Alabama and Tennessee	6 and 15	440,700.16	—	451,920.00
Do	June 3, 1856	11	17	Goosa and Tennessee	6 and 15	67,784.96	—	132,480.00
Do	June 3, 1856	11	17	Mobile and Gerard	6 and 15	—	—	840,880.00
Do	June 3, 1856	11	17	Goosa and Chattanooga	6 and 15	504,145.86	—	130,000.00
Do	June 3, 1856	11	17	Tennessee and Alabama Central	6 and 15	—	—	576,000.00
Do	June 3, 1856	11	17	Northeastern and Southwestern	6 and 15	289,535.58	—	691,840.00
Do	June 3, 1856	11	17	Wills' Valley	6 and 15	171,930.51	—	206,080.00
(Reviv act)	April 10, 1869	—	—	Consolidated and known as Alabama and Chattanooga Railroad	6 and 15	—	—	—
Florida*	May 17, 1856	11	15	Florida Railroad	6 and 15	931,984.17	—	483,542.14
Do	May 17, 1856	11	15	Alabama and Florida	6 and 15	165,588.00	—	165,688.00
Do	May 17, 1856	11	15	Pensacola and Georgia	6 and 15	1,273,212.93	—	1,508,739.87
Do	May 17, 1856	11	15	Florida, Atlantic and Gulf Central	6 and 15	37,583.29	—	133,183.99
Louisiana*	June 3, 1856	11	18	Vicksburg and Shreveport	6 and 15	353,211.70	—	610,840.00
Do	June 3, 1856	11	18	New Orleans, Opelousas and Great Western	6 and 15	719,193.75	—	907,840.00
Arkansas	Feb. 9, 1853	10	155	Cairo and Fulton	6 and 15	1,115,408.41	—	1,100,667.00
Do	July 28, 1866	14	338	Resolution extending completion of first twenty miles	Additional	—	—	966,722.00
Do	May 6, 1870	—	—	Memphis and Little Rock	6 and 15	127,238.51	—	438,646.80
Do	Feb. 9, 1853	10	155	Memphis and Little Rock	Additional	—	—	365,539.00
Do	July 28, 1866	14	338	Little Rock and Fort Smith	6 and 15	550,520.18	—	550,525.34
Do	Feb. 9, 1853	10	155	Little Rock and Fort Smith	Additional	—	—	498,771.00
Do	July 28, 1866	14	338	An act to extend the time for completion of first twenty miles. Repealed March 8, 1870	—	—	—	—
Do	April 10, 1869	—	—	Iron Mountain Railroad	10 and 20	—	—	864,000.00

* Grants to Mississippi, Alabama, Florida, and Louisiana, under acts of May 17, June 3, and August 11, 1856, have expired; application will be made to Congress to extend the time for the completion of the railroads in said States.

State	Date	Section	County	Acres	Value	Remarks
Missouri	June 10, 1852	10	Hamibal and St. Joseph	6 and 15	493, 812.35	781, 944.83
	June 10, 1852	10	Pacific and Southwestern Branch	6 and 15	1, 138, 073.54	1, 161, 233.07
	Feb. 9, 1853	10	Cairo and Fulton	6 and 15	63, 540.11	219, 263.31
	July 28, 1856	14	Cairo and Fulton	Additional		182, 718.09
	July 4, 1856	14	St. Louis and Iron Mountain	10 and 20		1, 400, 000.00
	May 15, 1856	11	Burlington and Missouri River	6 and 15	290, 860.07	948, 643.66
	May 6, 1870	Printed laws	An act to authorize the Burlington and Missouri River Railroad Company, or its assigns, to change the established line of said road in the State of Nebraska.			
	June 2, 1864	13	Burlington and Missouri River	20	95, 505.29	101, 110.67
	May 15, 1856	11	Chicago, Rock Island and Pacific	6 and 15	431, 774.36	1, 144, 904.90
	June 2, 1864	13	Chicago, Rock Island and Pacific	20	143, 869.71	116, 276.70
Iowa	June 2, 1856	13	Cedar Rapids and Missouri River	6 and 15		1, 298, 739.00
	May 15, 1856	11	Cedar Rapids and Missouri River	20		123, 370.00
	June 2, 1864	13	Dubuque and Sioux City	6 and 15	1, 226, 163.89	1, 226, 163.05
	Mar. 2, 1868	15	Authorizes change of route from Fort Dodge to Sioux City. Time of completion of road extended to January 1, 1872.			
	May 12, 1864	13	McGregor and Sioux City	10 and 20		1, 536, 000.00
	May 12, 1864	13	Sioux City and St. Paul	10 and 20		256, 000.00
	July 2, 1864	13	Sioux City and Pacific	10		580, 000.00
	June 3, 1856	11	Port Huron and Milwaukee	6 and 15	6, 458.68	312, 384.32
	June 3, 1856	11	Detroit and Milwaukee	6 and 15	30, 998.75	355, 430.19
	July 2, 1867	14	Jackson, Lansing and Saginaw	6 and 15	721, 403.25	1, 052, 469.19
Michigan	June 3, 1856	11	Time extended for completion of first twenty miles.			
	June 3, 1856	11	Flint and Pere Marquette	6 and 15		586, 898.73
	June 3, 1856	11	An act to change the western terminus of road.			
	June 3, 1856	11	Grand Rapids and Indiana	6 and 15		639, 182.62
	June 7, 1864	13	Grand Rapids and Indiana, from Fort Wayne to Grand Rapids.			
	June 3, 1856	11	Bay De Noquet and Marquette	20	218, 881.10	531, 200.00
	Mar. 3, 1865	13	Bay De Noquet and Marquette	200 sect s.		218, 880.87
	Mar. 3, 1865	13	Marquette and Ontonagon	6 and 15	216, 919.19	198, 000.00
	Mar. 20, 1868	15	Marquette and Ontonagon.	30	49, 086.45	309, 315.24
	June 3, 1856	11	Concerning certain lands granted to railroads in Michigan and Wisconsin			243, 200.00
Wisconsin	June 3, 1856	11	Chicago, St. Paul and Fond du Lac (branch to Ontonagon)	6 and 15	174, 020.41	308, 062.59
	June 3, 1856	11	Chicago, St. Paul and Fond du Lac (branch to Marquette)	6 and 15	162, 044.46	188, 507.24
	July 5, 1862	12	Chicago and Northwestern	6 and 15		375, 650.00
	Mar. 3, 1865	13	Chicago and Northwestern	Additional		188, 800.00
	June 3, 1856	11	Tonah and Lake Superior, now known as West Wisconsin	5	324, 943.38	894, 907.81
	May 5, 1864	13	sin	10 and 20		675, 000.00
	June 3, 1856	11	St. Croix and Lake Superior	6 and 15	524, 718.15	524, 714.95
	May 5, 1864	13	St. Croix and Lake Superior	10 and 20		350, 000.00
	June 3, 1856	11	Branch to Bayfield	6 and 15	318, 740.80	318, 737.74
	May 5, 1864	13	Chicago and Northwestern	10 and 20		215, 000.00
Minnesota	June 3, 1856	11	Changes line of route.	6 and 15	311, 307.72	600, 000.00
	April 25, 1862	12	Portage, Winnebago and Superior			
	May 5, 1864	13	Resolution explanatory of, and in addition to, the act of May 5, 1864.	10 and 20		1, 800, 000.00
	June 21, 1866	14	St. Paul and Pacific			
	Mar. 3, 1857	11	St. Paul and Pacific	6 and 15	466, 566.14	660, 000.00

No. 12.—Statement exhibiting land concessions by acts of Congress to States and corporations, &c.—Continued.

States.	Date of laws.	Statutes.	Page.	Name of road.	Mile limits,		Number of acres certified for the grants up to June 30, 1869.	Number of acres lying under the grants June 30, 1870.	Estimated quantities under the grants.
Minnesota	Mar. 3, 1865	13	526	St. Paul and Pacific	6 and 15	10 and 20	438, 075.38	500,000.00	750,000.00
Do.	Mar. 3, 1857	11	526	Branch St. Paul and Pacific.	6 and 15	10 and 20	174,498.91	80.00	735,000.00
Do.	Mar. 3, 1865	12	526	Branch St. Paul and Pacific.	6 and 15	10 and 20	342,376.51	200.00	353,403.09
Do.	July 12, 1862	12	624	Authorized change of route	6 and 15	10 and 20	711,242.57	1,040.00	290,000.00
Do.	Mar. 3, 1857	11	526	Minnesota Central	6 and 15	10 and 20	252,043.19	115,381.00	735,000.00
Do.	Mar. 3, 1865	13	526	Minnesota Central	6 and 15	10 and 20	125,480.94	550,000.00	550,000.00
Do.	Mar. 3, 1857	11	526	Winona and St. Peter.	6 and 15	10 and 20	2,500,000.00	2,500,000.00	2,500,000.00
Do.	Mar. 3, 1865	13	526	Winona and St. Peter.	6 and 15	10 and 20	1,700,000.00	1,700,000.00	1,700,000.00
Do.	Mar. 3, 1857	11	526	Minnesota Valley, now known as St. Paul and Sioux City	6 and 15	10 and 20	2,350,000.00	2,350,000.00	2,350,000.00
Do.	Mar. 3, 1865	13	526	Minnesota Valley, now known as St. Paul and Sioux City	6 and 15	10 and 20	1,203,000.00	1,203,000.00	1,203,000.00
Do.	May 12, 1864	13	74	Time extended for completion of road seven years.	6 and 15	10 and 20	290,000.00	290,000.00	290,000.00
Do.	July 13, 1866	14	97	Lake Superior and Mississippi	6 and 15	10 and 20	1,540,000.00	1,540,000.00	1,540,000.00
Do.	May 5, 1864	13	64	Authorized to make up deficiency within thirty miles of the west line of said road	6 and 15	10 and 20	1,600,000.00	1,600,000.00	1,600,000.00
Do.	July 13, 1866	14	93	Minnesota Southern	6 and 15	10 and 20	1,200,000.00	1,200,000.00	1,200,000.00
Do.	July 4, 1866	14	87	Hastings and Dakota River	6 and 15	10 and 20	35,000.00	35,000.00	35,000.00
Do.	July 4, 1866	14	87	Leavenworth, Lawrence and Galveston	6 and 15	10 and 20	379,957.67	379,957.67	379,957.67
Kansas	Mar. 3, 1863	12	772	Atchison, Topeka and Santa Fe	6 and 15	10 and 20	2,500,000.00	2,500,000.00	2,500,000.00
Do.	July 1, 1864	13	339	Union Pacific, Southern Branch	6 and 15	10 and 20	1,700,000.00	1,700,000.00	1,700,000.00
Do.	July 1, 1864	13	339	Union Pacific, Denver City	6 and 15	10 and 20	2,350,000.00	2,350,000.00	2,350,000.00
Do.	July 23, 1866	14	210	Kansas and Neosho Valley	6 and 15	10 and 20	2,500,000.00	2,500,000.00	2,500,000.00
Do.	July 25, 1866	14	236	Southern Branch of the Union Pacific Railroad from Fort Riley, Kansas, to Fort Smith, Arkansas	6 and 15	10 and 20	290,000.00	290,000.00	290,000.00
Do.	July 26, 1866	14	290	Placerville and Sacramento Valley	6 and 15	10 and 20	1,540,000.00	1,540,000.00	1,540,000.00
California	July 13, 1866	14	94	California and Oregon	6 and 15	10 and 20	1,600,000.00	1,600,000.00	1,600,000.00
Do.	July 25, 1866	14	239	An act to amend the sixth section of the original act	6 and 15	10 and 20	1,200,000.00	1,200,000.00	1,200,000.00
Do.	April 10, 1869	14	548	Stockton and Copperopolis	6 and 15	10 and 20	1,600,000.00	1,600,000.00	1,600,000.00
Oregon	Mar. 2, 1867	14	239	Oregon and California	6 and 15	10 and 20	1,200,000.00	1,200,000.00	1,200,000.00
Do.	July 25, 1866	14	239	An act to amend the sixth section of the original act	6 and 15	10 and 20	1,600,000.00	1,600,000.00	1,600,000.00
Do.	June 30, 1868	14	239	Central Pacific Railroad, California, to Portland, Oregon.	6 and 15	10 and 20	1,200,000.00	1,200,000.00	1,200,000.00
Do.	April 10, 1869	14	548	An act to amend the sixth section of the original act	6 and 15	10 and 20	1,600,000.00	1,600,000.00	1,600,000.00
Do.	May 4, 1870	14	548	From Portland to Astoria and McMinnville.	6 and 15	10 and 20	1,200,000.00	1,200,000.00	1,200,000.00
Corporations.	July 1, 1862	12	489	Union Pacific Railroad, with branch from Omaha, Nebraska, to Missouri River to Pacific Ocean.	6 and 15	10 and 20	1,600,000.00	1,600,000.00	1,600,000.00
Do.	Mar. 10, 1869	13	356	Name of Union Pacific Railroad changed to Kansas Pacific Railway Company.	6 and 15	10 and 20	1,200,000.00	1,200,000.00	1,200,000.00
Do.	July 2, 1864	13	356	Central Pacific, to eastern boundary of California, thence meet Union Pacific. (Act 1864, p. 363.)	6 and 15	10 and 20	35,000,000.00	35,000,000.00	35,000,000.00

Do.....	July 3, 1866	14	79	Union Pacific Railway Company, eastern division, to designate general route of road, &c., before Dec. 1, 1866.
Do.....	July 26, 1866	14	367	Granting Union Pacific Railroad Company right of way through military reserves.
Do.....	May 21, 1866	14	356	Extending the time for the construction of the first section of the Western Pacific Railroad.
Do.....	April 10, 1869			Joint resolution "for the protection of the interests of the United States in the Union Pacific Railroad Company, the Central Pacific Railroad Company, and for other purposes."
Do.....	May 6, 1870	Printed laws.		An act to fix point of junction of Union Pacific and Central Pacific Railroad Companies.
Do.....	July 2, 1864	13	365	Northern Pacific Railroad from Superior to Puget Sound.
Do.....	May 31, 1870	Printed laws.		A resolution authorizing Northern Pacific Railroad Company to issue its bonds, &c.
Do.....	May 7, 1866	14	355	Joint resolution extending the time for commencing and completing said road two years.
Do.....	April 10, 1869			Granting right of way for the construction of a railroad from a point at or near Portland, Oregon, to a point west of the Cascade Mountains, in Washington Territory.
Do.....	July 27, 1866	14	292	Atlantic and Pacific, from Springfield, Missouri, to the Pacific.
<i>Wagon roads.</i>				
Wisconsin ..	Mar. 3, 1863	12	797	From Fort Wilkins, Copper Harbor, Michigan, to Fort Howard, Green Bay, Wisconsin.
Do.....	June 8, 1868			Time extended for completion of road to March 1, 1870.
Michigan ..	Mar. 3, 1863	12	797	From Fort Wilkins, Copper Harbor, Michigan, to Fort Howard, Green Bay, Wisconsin.
Do.....	June 8, 1868			Time extended for completion of road to March 1, 1870.
Do.....	May 6, 1870			Time extended for completion of road to January 1, 1872.
Do.....	June 20, 1864	13	140	From Saginaw City, Michigan, by the shortest and most feasible route, to the Straits of Mackinaw.
Do.....	June 20, 1864	13	140	From Grand Rapids, through Newago, Traverse City, and Little Traverse, to Straits of Mackinaw.
Oregon	July 2, 1864	13	355	From Eugene City, by way of Middle Fork of Willamette River and the most feasible pass in the Cascade Range of mountains, near Diamond Peak, to the eastern boundary of the State.
Do.....	July 4, 1866	14	86	From Corvallis to the Aquinna Bay.
Do.....	July 5, 1866	14	89	From Albany, by way of Canyon City and the most feasible pass in the Cascade Range, to the eastern boundary of the State.
Do.....	Feb. 25, 1867	14	409	From Dalles City, on the Columbia River, to Fort Boise, on the Snake River.
Do.....	Mar. 3, 1869	Printed laws.		From navigable waters of Coos Bay to Rosburg.

No. 12.—Statement exhibiting land concessions by acts of Congress, &c.—Continued.

RECAPITULATION.

States.	Estimated number of acres granted for wagon roads.	Number of acres certified and patented under the grants.	Estimated number of acres inuring under the grants.
Illinois.....		2,595,053.00	2,595,053.00
Mississippi.....		908,680.29	2,062,240.00
Alabama.....		2,288,138.50	3,729,120.00
Florida.....		1,760,468.39	2,360,114.60
Louisiana.....		1,072,405.45	1,578,720.00
Arkansas.....		1,793,167.10	4,744,271.63
Missouri.....		1,715,435.00	3,745,160.21
Iowa.....		3,360,825.27	7,381,207.98
Michigan.....		2,912,093.62	5,327,930.99
Wisconsin.....		1,642,973.74	5,378,360.50
Minnesota.....		2,626,984.64	7,783,403.09
Kansas.....			7,753,000.00
California.....			2,060,000.00
Oregon.....			2,860,000.00
Corporations: Pacific railroads.....		22,676,225.00	59,308,581.40
		544,759.15	135,000,000.00
Wagon roads: Wisconsin.....	250,000.00	23,220,984.15	194,308,581.40
Michigan.....	1,718,613.27	153,505.74	
Oregon.....	1,888,600.00	55,781.74	3,857,213.27
Total.....		23,430,271.63	198,165,794.67

DEPARTMENT OF THE INTERIOR,
General Land Office, October 27, 1870.

JOS. S. WILSON, *Commissioner.*

No. 13.—*Estimates of appropriations required for the service of the fiscal year ending June 30, 1872, by the General Land Office.*

General object of appropriation.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1871.
For salary of Commissioner of General Land Office, act of July 4, 1836, (Stat. L., vol. 5, p. 111, sec. 10.)	\$3,000 00		
For salary of recorder, act of July 4, 1836, (Stat. L., vol. 5, p. 111, sec. 4.) act of March 3, 1837, (Stat. L., vol. 5, p. 164, sec. 1.)	2,000 00		
For salary of chief clerk, act of March 3, 1853, (Stat. L., vol. 10, p. 211, sec. 3.)	2,000 00		
For salary of three principal clerks of public lands, private land claims and surveys, at \$1,800 each, act of July 4, 1836, (Stat. L., vol. 5, p. 109, sec. 2; Stat. L., vol. 5, pp. 109, 111, secs. 2, 3.)	5,400 00		
For salary of three clerks of class four, act of March 3, 1853, (Stat. L., vol. 10, p. 211, sec. 3.)	5,400 00		
For salary of twenty-three clerks of class three, act of March 3, 1853, (Stat. L., vol. 10, p. 211, sec. 3;) act of April 22, 1854, (Stat. L., vol. 10, p. 276, sec. 1.)	36,800 00		
For salary of forty clerks of class two, (same acts)	56,000 00		
For salary of forty clerks of class one, (same acts)	48,000 00		
For salary of draughtsman, at \$1,600, and assistant draughtsman, at \$1,400, act of July 4, 1836, (Stat. L., vol. 5, p. 112, sec. 10;) act of April 22, 1854, (Stat. L., vol. 10, p. 276, sec. 1.)	3,000 00		
For salary of two messengers, at \$840 each, and three assistant messengers, at \$720 each, act of July 4, 1836, (Stat. L., vol. 5, p. 112, sec. 10;) act of August 18, 1856, (Stat. L., vol. 11, p. 145, sec. 1;) act of March 3, 1869, (Stat. L., vol. 15, p. 287, sec. 1;) act of July 12, 1870, (Laws, p. 243, sec. 1.)	3,840 00		
For salary of two packers, at \$720 each, act of July 4, 1836, (Stat. L., vol. 5, p. 112, sec. 10;) act of March 3, 1869, (Stat. L., vol. 15, p. 287, sec. 1.)	1,440 00		
For salary of seven laborers, at \$720 each, act of August 18, 1856, (Stat. L., vol. 11, p. 145, sec. 1;) act of March 3, 1869, (Stat. L., vol. 15, p. 287, sec. 1;) act of July 12, 1870, (Laws, p. 250, sec. 3.)	5,040 00	\$171,920 00	\$171,780 00
Additional clerks on account of military bounty lands—			
For salary of principal clerk as director, act of March 3, 1853, (Stat. L., vol. 10, p. 664, sec. 1.)	2,000 00		
For salary of one clerk of class three, (same act)	1,600 00		
For salary of four clerks of class two, (same act)	5,600 00		
For salary of thirty-five clerks of class one, act of March 3, 1853, (Stat. L., vol. 10, p. 664, sec. 1;) act of July 12, 1870, (Laws, p. 243, sec. 1.)	42,000 00		
For salary of two laborers, at \$720 each, act of August 18, 1856, (Stat. L., vol. 11, p. 145, sec. 1;) act of March 3, 1869, (Stat. L., vol. 15, p. 287, sec. 1;) act of July 12, 1870, (Laws, p. 250, sec. 3.)	1,440 00	52,640 00	*52,600 00
<i>Provided</i> , That the Secretary of the Interior, at his discretion, shall be, and he is hereby, authorized to use any portion of said appropriation for piece work, or by the day, week, month, or year, at such rate or rates as he may deem just and fair, not exceeding a salary of \$1,200 per annum.			
Contingent expenses: Cash system, diagrams, stationery, furniture, and repairs of the same; miscellaneous items, including two of the newspapers to be filed, bound, and preserved for the use of the office; advertising and telegraphing; miscellaneous items on account of bounty lands and military patents under the several acts, and contingent expenses under swamp land act of September 28, 1850.†	30,000 00	.....	10,000 00
Translation of the abridged report of the Commissioner of the General Land Office into foreign languages.‡ Submitted.	1,500 00	31,500 00	
For compensation of the President's secretary to sign patents for public lands, act of July 4, 1836, (Stat. L., vol. 5, p. 111, sec. 6.)	1,500 00	1,500 00	1,500 00

* The act of July 12, 1870, (Laws, p. 243, sec. 1.) appropriates \$52,600 on account of additional bounty lands, being \$40 less than the amount required to pay the employees enumerated in the estimate, and authorized under existing laws. The additional amount is accordingly submitted.

† An estimate of \$10,000 only was submitted last year for this service, because of a large unexpended balance remaining in the treasury. By the appropriation act of July 12, 1870, such balance was directed to be covered into the treasury. The sum of \$10,000 is entirely insufficient to meet the demands upon this fund. The sum of \$30,000 is, therefore, submitted as the lowest amount which will be required to meet the incidental expenses of this office.

‡ Authority has heretofore been given for the translation into foreign languages of the abridged report of the Commissioner, viz., into French, German, and Swedish, but no appropriation has been made for its translation, the expense attending the same having been defrayed out of the contingent fund of the office. The latter fund will be inadequate to meet this extra demand, and the above small sum is accordingly submitted.

No. 14.—*Estimates of appropriations required for the service of the fiscal year ending June 30, 1872, by the General Land Office.*

General object of appropriation.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1871.
Collecting revenue from public lands—			
Salaries and commissions of registers and receivers.* (See detail below.)	\$385,200 00	\$305,600 00
Incidental expenses of the several land offices.† (See detail below.)	38,375 00	20,600 00
Expenses of depositing public moneys.‡	10,000 00	.....

Detailed Statement.

State.	Land office.	Salaries and commissions.	Incidental expenses.	Total.
Alabama.....	Huntsville.....	\$6,000	\$400	\$18,700
	Mobile.....	5,000	400	
	Montgomery.....	6,000	900	
Arizona.....	Prescott.....	3,000	400	3,400
Arkansas.....	Dardanelle.....	6,000	500	
	Harrison.....	6,000	500	26,100
	Little Rock.....	6,000	600	
	Washington.....	6,000	500	
California.....	Humboldt.....	6,000	900	52,400
	Los Angeles.....	5,000	500	
	Marysville.....	6,000	900	
	San Francisco.....	6,000	900	
	Sacramento.....	5,000	500	
	Stockton.....	6,000	900	
	Visalia.....	6,000	900	
	Shasta.....	6,000	900	2,350
Ohio.....	Chillicothe.....	2,000	350	
Indiana.....	Indianapolis.....	1,500	300	1,800
Missouri.....	Boonville.....	6,000	500	
	Ironton.....	6,000	500	19,500
	Springfield.....	6,000	500	
Mississippi.....	Jackson.....	6,000	600	
Louisiana.....	New Orleans.....	6,000	600	11,100
	Natchitoches.....	4,000	500	
Michigan.....	Detroit.....	5,000	600	
	East Saginaw.....	6,000	500	30,300
	Ionia.....	5,000	400	
	Marquette.....	6,000	400	
	Traverse City.....	6,000	400	
Florida.....	Tallahassee.....	6,000	500	6,500
Iowa.....	Fort Des Moines.....	4,000	600	
	Council Bluffs.....	4,000	400	21,800
	Fort Dodge.....	6,000	400	
	Sioux City.....	6,000	400	
Nevada.....	Carson City.....	4,000	400	13,700
	Austin.....	4,000	400	
	Belmont.....	2,000	600	
	Aurora.....	2,000	300	
Washington.....	Olympia.....	6,000	900	13,800
	Vancouver.....	6,000	900	
Oregon.....	Oregon City.....	6,000	900	
	Roseburg.....	6,000	900	18,200
	Le Grand.....	4,000	400	
Colorado.....	Denver City.....	6,000	500	
	Fair Play.....	4,000	500	19,400
	Central City.....	4,000	400	
	Pueblo.....	3,000	1,000	
Illinois.....	Springfield.....	1,200	525	1,725

* This estimate is larger than that submitted for the fiscal year ending June 30, 1871, owing to the opening of new land offices, and the unavailability of balances of appropriations for this service during the fiscal year under existing laws.

† This estimate is larger than that submitted for the fiscal year ending June 30, 1871, owing to the opening of new land offices, the large increase of business at others, and the unavailability of balances of former appropriations for the service during the next fiscal year, in view of existing laws.

‡ No estimate was submitted last year, as the unexpended balance of former appropriations was deemed ample for this branch of the service, but such balance is now unavailable under existing laws,

No. 14.—Detailed statement, &c.—Continued.

State.	Land office.	Salaries and commissions.	Incidental expenses.	Total.
Wisconsin	Menasha	\$3,000	\$200	\$25,700
	Falls St. Croix	4,000	300	
	Stevens' Point	4,000	300	
	La Crosse	4,000	300	
	Bayfield	3,000	200	
Minnesota	Eau Claire	6,000	400	36,300
	Taylor's Falls	4,000	300	
	St. Cloud	6,000	400	
	Jackson	6,000	400	
	Litchfield	5,000	300	
Dakota	Du Luth	3,000	200	13,400
	Alexandria	4,000	300	
	New Ulm	6,000	400	
	Vermillion	6,000	400	
	Springfield	4,000	300	
Kansas	Pembina	2,500	200	29,100
	Topeka	5,000	600	
	Humboldt	4,000	300	
	Junction City	6,000	400	
	Augusta	6,000	400	
Nebraska	Concordia	6,000	400	27,800
	West Point	4,000	300	
	Beatrice	6,000	400	
	Lincoln	6,000	400	
	Dakota City	4,000	300	
Montana	Grand Island	6,000	400	5,400
	Helena	5,000	400	
Utah	Salt Lake City	6,000	400	6,400
New Mexico	Santa Fé	3,000	300	3,300
Wyoming	Cheyenne	3,000	300	3,300
Idaho	Boisé City	3,000	300	5,500
	Lewiston	2,000	200	
Total		385,200	38,375	423,575

DEPARTMENT OF THE INTERIOR,
General Land Office, October 27, 1870

JOS. S. WILSON, *Commissioner.*

No. 15.—*Estimates of appropriations required for the service of the fiscal year ending June 30, 1872, by the General Land Office, for the surveying department.*

Objects of appropriation.	Estimates by surveyors general.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1871.
Office of surveyor general of Louisiana:				
1. For compensation of the surveyor general, per act March 3, 1831, (4 Stat., p. 493, sec. 5.)	\$2,000	\$2,000		
2. For compensation of clerks in office of surveyor general, per act May 9, 1836, (5 Stat., p. 26, sec. 1.)	4,500	4,500		
3. For rent of office for surveyor general, fuel, books, stationery, and other incidental expenses, per act March 3, 1831, (4 Stat., p. 493.)	2,500	2,500	\$6,500 2,500	\$4,500 1,000
Office of surveyor general of Florida:				
4. For compensation of the surveyor general, per act March 3, 1823, (3 Stat., p. 755, sec. 7.)	2,000	2,000		
5. For compensation of clerks in office of surveyor general, per act May 9, 1836, (5 Stat., p. 26, sec. 1.)	6,400	4,500	6,500	4,500
6. For rent of office for surveyor general, fuel, books, stationery, and other incidental expenses, per act May 9, 1836, (5 Stat., p. 26, sec. 1.)	1,500	1,500	1,500	1,000
Office of surveyor general of Minnesota:				
7. For compensation of the surveyor general, per acts May 18, 1796, and March 3, 1857, (1 Stat., p. 468, sec. 10; 11 Stat., p. 212, sec. 1.)	2,000	2,000		
8. For compensation of clerks in office of surveyor general, per acts May 9, 1836, and March 3, 1857, (5 Stat., p. 26, sec. 1; 11 Stat., p. 212, sec. 1.)	6,300	6,300	8,300	8,300
9. For rent of office for surveyor general, fuel, books, stationery, and other incidental expenses, per act March 3, 1857, (11 Stat., p. 212, sec. 1.)	2,200	2,200	2,200	2,000
Office of surveyor general of Dakota Territory:				
10. For compensation of the surveyor general, per act March 2, 1868, (12 Stat., p. 244, sec. 17.)	2,000	2,000		
11. For compensation of clerks in office of surveyor general, per act March 2, 1868, (12 Stat., p. 244, sec. 17.)	6,300	6,300	8,300	8,300
12. For rent of office for surveyor general, fuel, books, stationery, and other incidental expenses, per act March 2, 1868, (12 Stat., p. 244, sec. 17.)	2,000	2,000	2,000	2,000
Office of surveyor general of Kansas:				
13. For compensation of the surveyor general, per act July 22, 1854, (10 Stat., p. 309, sec. 10.)	2,000	2,000		
14. For compensation of clerks in office of surveyor general, per act July 22, 1854, (10 Stat., p. 309, sec. 10.)	7,500	7,500	9,500	8,300
15. For rent of office for surveyor general, fuel, books, stationery, and other incidental expenses, per act July 22, 1854, (10 Stat., p. 309, sec. 10.)	2,000	2,000	2,000	2,000
Office of surveyor general of Colorado Territory:				
16. For compensation of the surveyor general, per act February 28, 1861, (12 Stat., p. 176, sec. 17.)	3,000	3,000		
17. For compensation of clerks in office of surveyor general, per act February 28, 1861, (12 Stat., p. 176, sec. 17.)	6,300	6,300	9,300	7,000
18. For rent of office for surveyor general, fuel, books, stationery, and other incidental expenses, per act February 28, 1861, (12 Stat., p. 176, sec. 17.)	2,000	2,000	2,000	2,000
Office of surveyor general of New Mexico Territory:				
19. For compensation of the surveyor general, per act July 22, 1854, (10 Stat., p. 308, sec. 1.)	3,000	3,000		
20. For compensation of clerks in office of surveyor general, per act July 22, 1854, (10 Stat., p. 308, sec. 1.)	12,000	5,000	8,000	7,000
21. For rent of office for surveyor general, fuel, books, stationery, and other incidental expenses, per act July 22, 1854, (10 Stat., p. 308, sec. 1.)	2,000	2,000	2,000	1,200
Office of surveyor general of California:				
22. For compensation of the surveyor general, per act May 30, 1862, (12 Stat., p. 410, sec. 9.)	3,000	3,000		
23. For compensation of clerks in office of surveyor general, per act March 3, 1853, (10 Stat., p. 245, sec. 2.)	12,000	11,000	14,000	14,000

No. 15.—*Estimates of appropriations required for the service, &c.*—Continued.

Objects of appropriation.	Estimates by surveyors general.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1871.
24. For rent of office for surveyor general, fuel, books, stationery, and other incidental expenses, per act March 3, 1853, (10 Stat., p. 245, sec. 2.) Office of surveyor general of Idaho Territory:	\$6,000	\$6,000	\$6,000	\$4,000
25. For compensation of the surveyor general, per act June 29, 1866, (14 Stat., p. 77, sec. 1.)	3,000	3,000		
26. For compensation of clerks in office of surveyor general, per act June 29, 1866, (14 Stat., p. 77, sec. 1.)	4,000	4,000	7,000	7,000
27. For rent of office for surveyor general, fuel, books, stationery, and other incidental expenses, per act June 29, 1866, (14 Stat., p. 77, sec. 1.) Office of surveyor general of Nevada:	3,000	2,500	2,500	2,000
28. For compensation of the surveyor general, per act July 4, 1866, (14 Stat., p. 86, sec. 4.)	3,000	3,000		
29. For compensation of clerks in office of surveyor general, per act July 4, 1866, (14 Stat., p. 86, sec. 4.)	7,800	6,000	9,000	7,000
30. For rent of office for surveyor general, fuel, books, stationery, and other incidental expenses, per act July 4, 1866, (14 Stat., p. 86, sec. 4.) Office of surveyor general of Oregon:	3,700	3,700	3,700	4,000
31. For compensation of the surveyor general, per act May 30, 1862, (12 Stat., p. 410, sec. 9.)	2,500	2,500		
32. For compensation of clerks in office of surveyor general, per act September 27, 1850, (9 Stat., p. 496, sec. 2.)	5,400	5,400	7,900	6,500
33. For rent of office for surveyor general, fuel, books, stationery, and other incidental expenses, per act September 27, 1850, (9 Stat., p. 496, sec. 2.) Office of surveyor general of Washington Territory:	2,000	2,000	2,000	2,000
34. For compensation of the surveyor general, per acts July 17, 1854, and May 30, 1862, (10 Stat., p. 306, sec. 7; 12 Stat., p. 410, sec. 9.)	2,500	2,500		
35. For compensation of clerks in office of surveyor general, per act March 3, 1855, (10 Stat., p. 674, sec. 26.)	5,900	5,900	8,400	8,500
36. For rent of office for surveyor general, fuel, books, stationery, and other incidental expenses, per act July 17, 1854, (10 Stat., p. 306, sec. 7.) Office of surveyor general of Nebraska and Iowa:	2,000	2,000	2,000	2,000
37. For compensation of the surveyor general, per acts July 17, 1854, and May 30, 1862, (10 Stat., p. 306, sec. 7; 12 Stat., p. 410, sec. 9.)	2,000	2,000		
38. For compensation of clerks in office of surveyor general, per acts July 17, 1854, and May 30, 1862, (10 Stat., p. 306, sec. 7; 12 Stat., p. 410, sec. 9.)	7,300	7,300	9,300	8,300
39. For rent of office for surveyor general, fuel, books, stationery, and other incidental expenses, per acts June 12, 1838, and March 2, 1867, (5 Stat., p. 243; 14 Stat., p. 448, sec. 1.) Office of surveyor general of Montana Territory:	2,200	2,000	2,000	2,000
40. For compensation of the surveyor general, per act March 2, 1867, (14 Stat., p. 542, sec. 1.)	3,000	3,000		
41. For compensation of clerks in office of surveyor general, per act March 2, 1867, (14 Stat., p. 542, sec. 1.)	4,000	4,000	7,000	7,000
42. For rent of office for surveyor general, fuel, books, stationery, and other incidental expenses, per act March 2, 1867, (14 Stat., p. 542, sec. 1.) Office of surveyor general of Utah Territory:	2,000	2,000	2,000	3,000
43. For compensation of the surveyor general, per act July 16, 1868, (15 Stat., p. 91, sec. 1.)	3,000	3,000		
44. For compensation of clerks in office of surveyor general, per act July 16, 1868, (15 Stat., p. 91, sec. 1.)	4,700	4,700	7,700	7,000
45. For rent of office for surveyor general, fuel, books, stationery, and other incidental expenses, per act July 16, 1868, (15 Stat., p. 91, sec. 1.)	1,800	1,800	1,800	2,000

No. 15.—*Estimates of appropriations required for the service, &c.*—Continued.

Objects of appropriation.	Estimates by surveyors general.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1871.
Office of surveyor general of Wyoming Territory:				
46. For compensation of the surveyor general, per act February 5, 1870, (Pamph. Laws, p. 65, sec. 2.)	\$3, 000		
47. For compensation of clerks in office of surveyor general, per acts February 5, 1870, and February 28, 1861, (Pamph. Laws, p. 65 sec. 2; 12 Stat., p. 176, sec. 17.)	6, 300	\$9, 300	\$7, 000
48. For rent of office for surveyor general, fuel, books, stationery, and other incidental expenses, per acts February 5, 1870, and February 28, 1861; (Pamph. Laws, p. 65, sec. 2; 12 Stat., p. 176, sec. 17.)	2, 500	2, 500	2, 000
Office of surveyor general of Arizona Territory:				
49. For compensation of the surveyor general, per act July 11, 1870, (Pamph. Laws, p. 230.)	3, 000		
50. For compensation of clerks in office of surveyor general, per act July 11, 1870, (Pamph. Laws, p. 230.)	4, 000	7, 000	.....
51. For rent of office for surveyor general, fuel, books, stationery, and other incidental expenses, including furniture required in establishment of office, per act July 11, 1870, (Pamph. Laws, p. 230.)	3, 000	3, 000	.....
Map of the United States and Territories:				
52. For constructing the connected map of the public land States and Territories, and procuring an engraved copper-plate thereof, to be perfected by adding from year to year the further surveys that may be made, per act January 6, 1863, (12 Stat., p. 822.)	3, 000	3, 000	.....
Office of recorder of land titles for Missouri:				
53. For compensation of the recorder of land titles, per act March 2, 1865, (2 Stat., p. 326, sec. 3.)	500	500	500

EXPLANATION OF THE FOREGOING ESTIMATES.

1. The organic act of this surveying district provides \$2,500 for clerk hire and \$1,000 for contingent expenses. These amounts being inadequate, the present estimates are submitted as absolutely required for the service.

4. The organic act of this surveying district provides \$3,500 for clerk hire and \$1,000 for contingent expenses. These amounts being inadequate, the present estimates are submitted as absolutely required for the service.

7, 10, 25, 40, and 49. The organic acts of these surveying districts provide \$1,000 for contingent expenses. This amount being inadequate, the present estimates are submitted as absolutely required for the service.

13 and 37. The organic acts of these surveying districts provide \$6,300 for clerk hire and \$1,000 for contingent expenses. These amounts being inadequate, the present estimates are submitted as absolutely required for the service.

16, 19, 28, 31, 34, 43, and 46. The organic acts of these surveying districts provide \$4,000 for clerk hire and \$1,000 for contingent expenses. These amounts are inadequate, and the present estimates are submitted as absolutely required for the service.

52. The map prepared in 1862, and the engraved plate thereof authorized by joint resolution of January 6, 1863, having proved by subsequent actual surveys during eight years to be imperfect, and not susceptible of being corrected, and, besides, the map not embracing Alaska, acquired by subsequent treaty, this estimate is submitted in order to secure a correct map of the public domain, greatly needed for Government purposes.

JOS. S. WILSON, *Commissioner*.

DEPARTMENT OF THE INTERIOR,
General Land Office, October 27, 1870.

No. 16.—*Estimates of appropriations required for surveying the public lands for the fiscal year ending June 30, 1872.*

Objects of appropriation.	Estimates by surveyors general.	Estimated amount which will be required for each detailed object of expenditure.	Total amount to be appropriated under each head of appropriation.	Amount appropriated for the current fiscal year ending June 30, 1871.
1. For surveying the public lands in Louisiana, at rates not exceeding \$10 per lineal mile for township, and \$8 for section lines.	\$12, 240	\$12, 240	\$12, 240	\$10, 030
2. For surveying the public lands in Florida, at rates not exceeding \$10 per lineal mile for standard, \$7 for township, and \$6 for section lines.	33, 400	12, 500	12, 500	10, 600
3. For surveying the public lands in Minnesota, at rates not exceeding \$15 per lineal mile for standard, \$12 for township, and \$10 for section lines.	69, 823	45, 000	45, 000	40, 000
4. For surveying the public lands in Dakota Territory, at rates not exceeding \$10 per lineal mile for standard, \$7 for township, and \$6 for section lines.	60, 000	30, 000	30, 000	20, 000
5. For surveying the public lands in Montana Territory, at rates not exceeding \$15 per lineal mile for standard, \$12 for township, and \$10 for section lines.	45, 000	30, 000	30, 000	30, 000
6. For surveying the public lands in Nebraska, at rates not exceeding \$10 per lineal mile for standard, \$7 for township, and \$6 for section lines.	78, 847	45, 000	45, 000	40, 000
7. For surveying the public lands in Kansas, at rates not exceeding \$10 per lineal mile for standard, \$7 for township, and \$6 for section lines.	78, 352	45, 000	45, 000	40, 000
8. For surveying the public lands in Colorado Territory, at rates not exceeding \$15 per lineal mile for standard, \$12 for township, and \$10 for section lines.	78, 000	40, 000	40, 000	40, 000
9. For surveying the public lands in Idaho Territory, at rates not exceeding \$15 per lineal mile for standard, \$12 for township, and \$10 for section lines.	34, 260	30, 000	30, 000	20, 000
10. For surveying the public lands in New Mexico Territory, at rates not exceeding \$15 per lineal mile for standard, \$12 for township, and \$10 for section lines.	90, 012	15, 000	15, 000	10, 030
11. For surveying the public lands in California, at rates not exceeding \$18 per lineal mile for standard, \$15 for township, and \$12 for section lines.	70, 000	45, 000	45, 000	50, 000
12. For surveying the public lands in Oregon, at rates not exceeding \$18 per lineal mile for standard, \$15 for township, and \$12 for section lines.	58, 100	35, 000	35, 000	40, 000
13. For surveying the public lands in Washington Territory, at rates not exceeding \$18 per lineal mile for standard, \$15 for township, and \$12 for section lines.	67, 056	35, 000	35, 000	20, 000
14. For surveying the public lands in Utah Territory, at rates not exceeding \$15 per lineal mile for standard, \$12 for township, and \$10 for section lines.	15, 000	15, 000	15, 000	20, 000
15. For surveying the public lands in Nevada, at rates not exceeding \$15 per lineal mile for standard, \$12 for township, and \$10 for section lines.	55, 600	45, 000	45, 000	47, 000
16. For surveying the public lands in Wyoming Territory, at rates not exceeding \$15 per lineal mile for standard, \$12 for township, and \$10 for section lines.	.....	40, 000	40, 000	40, 000
17. For surveying the public lands in Arizona Territory, at rates not exceeding \$15 per lineal mile for standard, \$12 for township, and \$10 for section lines.	.....	10, 000	10, 000	10, 000

EXPLANATION OF THE FOREGOING ESTIMATES.

NOTE.—No specific sum is authorized by any act of Congress, estimates of appropriations for the surveying service having been submitted from year to year in accordance with the demands of the service, and appropriations made accordingly.

The amounts in the last column were appropriated for surveying the public lands in the several districts during the fiscal year ending June 30, 1871, by the act of Congress approved July 15, 1870.—(Pamphlet Laws, 1869-70, pp. 304 and 305.)

1. \$12,240 is estimated for subdivisinal surveys in the southeastern, southwestern, and northwestern districts of lands formerly regarded as swamp and overflowed, but which are now fit for agricultural purposes.

2. \$12,500 is estimated for surveys of standard, parallel, township, and section lines in the southern peninsula north and south of the Caloosahatchie River, where settlements exist and immigration is increasing, the lands being adapted to the culture of the sugar cane and other tropical products.

3. \$45,000 is estimated for the survey of standard, parallel, township, and section lines required to meet the demands of a rapidly settling country and the claims of different railroad companies to select the lands granted by Congress in aid of the construction of their lines, and for the survey of pine lands on the Upper Mississippi.

4. \$30,000 is estimated for the survey of standard, parallel, township, and section lines in the valleys of Big Stone Lake, Dakota and Wood Rivers, and to meet the demands of settlement along the projected route of the Northern Pacific Railroad.

5. \$30,000 is estimated for the survey of standard, parallel, township, and section lines in the valleys of the Missouri and the Jefferson, Madison, and Gallatin Forks of that river, and for the extension of standard and township lines to mineral localities, in order to enable deputy surveyors to connect surveys of mining claims with the public system.

6. \$45,000 is estimated for the survey of standard, parallel, township, and section lines along the Union Pacific Railroad, already completed, to enable the company to select the lands granted by Congress in aid of its construction, and in other localities where settlements have been made.

7. \$45,000 is estimated for the survey of standard, parallel, township, and section lines along the eastern division of the Union Pacific Railroad, adjoining the western boundary of the State, on the Arkansas River, between Forts Dodge and Larned, along the northern boundary of the Osage ceded lands, and also in other localities where settlements exist.

8. \$40,000 is estimated for the survey of standard, parallel, township, and section lines in the San Luis, South and Middle Parks, along the lines of the Union Pacific, Kansas Pacific, and Denver Pacific Railroads, and in other localities where required to meet the demands of increasing settlement.

9. \$30,000 is estimated for the survey of standard, parallel, township, and section lines in the northern and southeastern portions of the Territory, where settlements exist, and to extend the standard and township lines to mineral localities to enable mining claims to be located with reference to the corners of the public surveys.

10. \$15,000 is estimated for the survey of standard, parallel, township, and section lines in the north eastern and southwestern portions of the Territory on the Pecos River, near Fort Wingate, and in mineral localities.

11. \$45,000 is estimated for the survey of standard, parallel, township, and section lines along the Northern, Southern, and Central Pacific Railroads, to permit the latter company to select the lands granted by Congress in aid of the construction of that road, already completed, in mineral regions and in localities where settlements exist; also, in regions adjoining private land grants.

12. \$35,000 is estimated for the survey of standard, parallel, township, and section lines along the Oregon Central military road, and the land grant railroad lines, the John Day River in the southeastern part of the State, and in other localities to accommodate the demands of settlement.

13. \$35,000 is estimated for the survey of standard, parallel, township, and section lines along the route of the Northern Pacific Railroad to allow the selection of lands granted by Congress in aid of the construction of that road, on the Yakama and Cowlitz Rivers, and over the lands surrendered to the public domain by the Puget Sound Agricultural Company.

14. \$15,000 is estimated for the survey of standard, parallel, township, and section lines along the Union Pacific Railroad, already completed, in the mining regions and in localities where settlements are reported.

15. \$45,000 is estimated for the survey of standard, parallel, township, and section lines along the Central Pacific Railroad, already completed, to allow the selection of lands granted by Congress in aid of the construction of that road in the mining regions, and in the regions at the foot of the mountains, to accommodate the demands of settlement.

16. \$40,000 is estimated for the survey of standard, parallel, township, and section lines along the Union Pacific Railroad, already completed, to allow the selection of lands granted in aid of the construction of that road, and in other localities in the southern part of the Territory, to meet the demands of settlement.

17. \$10,000 is estimated for the survey of standard, parallel, township, and section lines in the southern part of the Territory, in the valleys of the Gila, Santa Cruz, and San Francisco Rivers.

JOS. S. WILSON, *Commissioner*.

DEPARTMENT OF THE INTERIOR.

General Land Office, October 27, 1870.

No. 17 A.--Report of the surveyor general of Florida.

UNITED STATES SURVEYOR GENERAL'S OFFICE,
Tallahassee, Florida, August 31, 1870.

SIR: I have the honor, in accordance with your instructions, to submit the following report of surveying operations in this district during the fiscal year ending June 30, 1870, together with tabular statements of field and office work.

On account of the bad condition of the records, and the want of information in this office as to where the public interest most required the extension of surveys, I was rather late in getting my deputies into the field. I determined, however, to extend the surveys directly southward from where they had been suspended, and to carry them forward in regular order, except where application should be made for special surveys, by settlers, according to law.

On the 26th day of October, 1869, I contracted with Deputy J. W. Childs for the survey of twelve townships to the south and west of Lake Istokpog, namely, township 37 south, range 23 east; townships 37 and 38 south, range 27 east; and townships 36, 37, and 38 south, ranges 28, 29, and 30 east. The deputy took the field about the middle of December and returned his work in person the 28th of March following. The office work was completed, and the duplicate plats and transcribed field-notes forwarded to the General Land Office on the 8th of June. The triplicate plats and de-

scriptive notes were transmitted to the district land office, and the original plats and field-notes placed on file in this office. This contract exceeded the estimate by 180 miles, in consequence of the exterior surveys not correctly showing the limits of Lake Istokpoga.

I next contracted with Deputy J. D. Stanbury, on the 3d December, for the survey of eleven townships to the south and east of Lake Istokpoga and joining the contract of Deputy Childs, namely, townships 36, 37, and 38 south, ranges 31, 32, and 33 east; township 39 south, range 31 east; and township 38 south, range 34 east. The deputy took the field in the latter part of February. On the 1st of March he applied for an extension of time from May 1, as fixed in his contract, to June 15. The reasons given, namely, the difficulty and delay he had experienced in reaching his field of labor, the hardness of the work, and the time which would be taken up in returning, being satisfactory, his request was granted, and notice thereof was sent to him on the 2d of May, his letter of March 1 having then only just arrived. Return was made of the work by the deputy in person on the 14th June. The office work is not yet entirely completed, but will be finished and reported in a few days.

The third and last contract for the year for the public surveys was made on the 25th February, with Deputies William H. Gleason and M. A. Williams, for the survey of the narrow strip of land between the Everglades and the Atlantic, namely, township 45 south, ranges 42 and 43 east; townships 46 and 47 south, range 43 east; townships 48 and 49 south, ranges 41, 42, and 43 east; and townships 50, 51, and 52 south, ranges 41 and 42 east. They took the field about the end of April and have not yet made returns. I have, however, received favorable reports of progress from them.

On the 20th November a deposit was made with the United States assistant treasurer at New York, by John Westcott, esq., for the survey of a private claim of two hundred acres in the name of Andrew Atkinson, situated near Jacksonville, on the west side of the St. John's River, between Trout and Dunn's Creeks, (State Papers, vol. iv. pp. 278, 407,) estimates of the cost of such survey having been furnished him by this office. Accordingly I contracted on the 10th January with Deputy C. F. Smith for the survey. By the terms of the contract the work was to have been completed and returned by the 1st of March, but notice of the approval of the contract not being received till after that date, his time was extended to the 10th April. The work was returned on the 9th April, and the office work completed and reported to the General Land Office on the 10th June, the proper record being made in this office and transmitted to the district land office. The amount of deposit, cost of survey, and other particulars of this and the other contracts, are shown in the tabular statements herewith submitted. This completes the surveying operations for the year.

The portion of country over which the surveys have been extended since I took charge of the office is mostly flat and low, and during the rainy season a great part of it is covered with water. A few townships immediately west of Lake Istokpoga are more rolling and interspersed with clear ponds from a hundred to two thousand acres in extent. The chief value of that section of the State is for grazing. In its present condition the land cannot be cultivated to any considerable extent, although much of the soil is very rich. If, however, the level of water in Lake Okeechobee could be lowered, by canaling or otherwise, about four feet, many thousand acres of arable land would be reclaimed. A company has been chartered having this enterprise in view. I am in daily expectation of receiving the returns of Messrs. Gleason and Williams's survey, which will define a portion of the eastern boundary of the Everglades and throw much light on the question of their entire or partial reclamation. If it is found practicable to reclaim any considerable extent of the land in that region, now overflowed during the whole or part of the year, it is impossible to foretell the results that would follow. The rich soil and tropical climate would present opportunities for the successful culture of almost all tropical products of value in commerce, and thus open a fountain of wealth, perennial and inexhaustible.

It is my intention during the coming year to carry forward the surveys to the Caloosahatchee River, or as near to it as the means at my disposal will allow.

In addition to the office work pertaining to the surveys executed, this office has furnished the district land office during the year with 113 township plats and descriptive notes of 26 townships. A portion of the unfinished work which has been allowed to accumulate in former years has been completed, and somewhat more remains to be done.

On looking over the files of the office on taking charge, field-notes were found of surveys executed previous to the passage of the ordinance of secession and under authority of the United States, but never reported to, nor approved by, any United States officer. These field-notes, namely, of township 34 south, range 25 east, surveyed by James D. Galbraith, in March 1860, and townships 42, 43, and 44 south, of same range, surveyed by Ramon Canova, in December 1860, and January 1861, previous to secession, were examined and found correct, the office work was completed and reported on the 13th November and 1st December, and on receiving instructions to that effect, the triplicate plats were transmitted to the district land office.

In classifying and arranging the Spanish archives it has been discovered that several bundles or volumes containing records of chains of title to land from the original grantees to subsequent owners are missing. I have no clue to the whereabouts of these valuable bundles. They were probably removed for examination during the war and have never been returned. I have made inquiry for the missing bundles, but have only been able to recover three, which I found in the hands of private parties.

A few specimens in mineralogy and geology have been forwarded for the geological cabinet of the General Land Office. The State is almost destitute of mineral lands, practically entirely so, as there are no lands with sufficient minerals to give them any special value.

Accompanying this report I send the following papers, viz:

- A.—A diagram showing the progress of surveys.
- B.—A tabular report of surveying operations.
- C.—A list of plats furnished the district land office.
- D.—A list of descriptive notes furnished the district land office.
- E.—A report of deposits by individuals for special surveys.
- F.—A statement of the condition of contracts not closed at the date of last report
- G.—A report on the resources, industry, and wealth of the State.

I am, very respectfully, your obedient servant,

M. L. STEARNS,
Surveyor General

Hon. JOS. S. WILSON,
Commissioner General Land Office, Washington, D. C.

B.—Report of surveying operations in the district of Florida during the year ending the 31st of August 1870, showing the present condition of the contracts made since last annual report.

Names of deputies.	Date of contract.	Character of work.	Locality.		Time allowed.	When returned.	When forwarded.	Number of miles returned.	Remarks.
			Township south.	Range east.					
J. W. Childs.....	Oct. 26, 1869	Subdivision.....	37 37, 38 36, 37, 38 36, 37, 38	26 27 28, 29, 30 31, 32, 33	April 1, 1870	March 13, 1870	June 8, 1870	M. Ch. 750 56.00	Plats and descriptive notes furnished to district land office. Time extended to 15th June; office work not yet completed. Not yet returned.
J. D. Stanbury.....	Dec. 3, 1869	Subdivision.....	39 38	34	May 1, 1870	June 14, 1870	.....	.....	.....
W. H. Gleason and M. A. Williams.	Feb. 23, 1870	.....	45 46, 47 48, 49 50, 51, 52	42, 43 43 41, 42, 43 41, 42	Sept. 1, 1870	.....	.....	.....	.....
Charles F. Smith.....	Jan. 10, 1870	Private claim of Andrew Aukinson.	1	27	March 1, 1870	April 9, 1870	June 10, 1870	4 70.93	Time extended to 10th April. Diagram furnished to district land office.

Respectfully submitted.

UNITED STATES SURVEYOR GENERAL'S OFFICE,
Tallahassee, Florida, August 31, 1870.

M. L. STEARNS, *Surveyor General.*

C.—*Report of plats furnished the district land office during the year ending August 30, 1870.*

Township south.	Range east.	When furnished.	Remarks.
50.....	42	Sept. 18, 1869	Claim of Twankee Lewis for 638 acres.
19.....	30	Dec. 1, 1869	} On requisition of register to replace mutilated plats.
34.....	25	Dec. 8, 1869	
28.....	17, 18	Dec. 10, 1869	Plats which had never been furnished the district land office.
28, 29, 41, 42.....	20	Dec. 10, 1869	Do.
35, 36, 37, 38, 39, 40, 41, 42.....	21	Dec. 10, 1869	Do.
35, 36, 37, 38, 39, 40, 41.....	22	Dec. 10, 1869	Do.
37, 38, 39, 40.....	23	Dec. 10, 1869	Do.
38, 40.....	24	Dec. 10, 1869	Do.
31, 32, 33, 34, 35.....	27, 28	Dec. 10, 1869	Do.
33, 34.....	29	Dec. 10, 1869	Do.
32, 33.....	30	Dec. 10, 1869	Do.
31, 32, 33, 34, 35.....	32	Dec. 10, 1869	Do.
32, 33, 34, 35.....	33	Dec. 10, 1869	Do.
31, 32, 33, 34, 35, 37.....	34	Dec. 10, 1869	Do.
18, 32, 33, 34, 35.....	35	Dec. 10, 1869	Do.
21, 22, 23.....	36	Dec. 10, 1869	Do.
21, 22, 25, 26.....	37	Dec. 10, 1869	Do.
22, 23, 27, 28, 30, 34.....	38	Dec. 10, 1869	Do.
29, 30, 31, 32, 40, 41, 42.....	39	Dec. 10, 1869	Do.
32, 33, 34, 41, 42, 43.....	40	Dec. 10, 1869	Do.
37, 44.....	41	Dec. 10, 1869	Do.
39, 42, 43, 44.....	42	Dec. 10, 1869	Do.
40, 41, 42, 43, 44.....	43	Dec. 10, 1869	Do.
10.....	30	Dec. 18, 1869	On requisition of register to replace mutilated plats.
2, 2, 3.....	12, 13, 14	April 4, 1870	
37.....	26	June 30, 1870	Contract of J. W. Childs.
37, 38.....	27	June 30, 1870	Do.
36, 37, 38.....	28, 29, 30	June 30, 1870	Do.
42, 43, 44.....	25	June 30, 1870	123 plats in all.

Respectfully submitted.

M. L. STEARNS,
Surveyor General.

UNITED STATES SURVEYOR GENERAL'S OFFICE,
Tallahassee, Florida, August 31, 1870.

D.—*Report of descriptive notes furnished the district land office during the year ending August 31, 1870.*

Township south.	Range east.	When furnished.	Remarks.
28, 29.....	17	May 5, 1870	Never heretofore furnished.
28, 30.....	18	May 5, 1870	Do.
40, 41.....	20	May 5, 1870	Do.
35, 36, 37, 38, 39, 40, 41, 42.....	21	May 5, 1870	Do.
35, 36, 37, 38, 39, 40.....	22	May 5, 1870	Do.
40.....	23	May 5, 1870	Do.
34.....	25	May 5, 1870	Do.
32.....	27	May 5, 1870	Do.
37.....	36	June 30, 1870	Contract of J. W. Childs.
37, 38.....	37	June 30, 1870	
36, 37, 38.....	28, 29, 30	June 30, 1870	
42, 43, 44.....	25	.....	38 in all.

Respectfully submitted.

M. L. STEARNS,
Surveyor General.

UNITED STATES SURVEYOR GENERAL'S OFFICE,
Tallahassee, Florida, August 31, 1870.

E.—Report of deposits made by individuals for special surveys during the year ending August 31, 1870.

Name of depositor.	Deposit.			For what survey.	Surveyed.		Actual cost.	Balance due depositor.	Remarks.
	Amount.	Place.	Date.		When.	By whom.			
John Westcott.....	*\$30 00	Ass't Treas., N. Y.	Nov. 30, 1869	Private claim of Andrew Atkinson for 200 acres in township 1 south, of range 27 east.	April --, 1870	Charles F. Smith.	*\$24 43	\$5 57	Accounts of depositor forwarded August 2, 1870.
	†25 00						†22 75	2 25	
	55 00						47 18	7 82	

* For field work. † For office work.

Respectfully submitted.

M. L. STEARNS, *Surveyor General.*

UNITED STATES SURVEYOR GENERAL'S OFFICE, Tallahassee, Florida, August 31, 1870.

F.—Statement showing the present condition of contracts not closed at the date of last annual report.

Name of deputy.	Date of contract.	Character of work.	Locality.		Time allowed.	Miles surveyed.		Present condition of contract, and remarks.
			Township south.	Range east.		Miles	Ch's	
James D. Galbraith	Nov. 10, 1858.	Subdivision	34 and 35 36 and 37	24 and 25 25	April 10, 1859, extended to April 10, 1860.	122	01	Townships 36 and 37 south, range 25 east, sent to Commissioner September 11, 1860. Township 34 south, range 25 east, returned, but not approved, prior to January 10, 1861. Examined, approved, and sent to Commissioner November 13, 1860. Balance of work not reported. Contractor deceased.
John B. Kilgore	Oct. 28, 1859.	Subdivision	37 32	{ 26, 27, 28 } { 29 and 30 } 27	May 1, 1860.	95	73	Township 32 south, range 27 east, finished, approved and reported May 31, 1860. Township 37 south, range 27 east, (east half) reported to Commissioner in 1860. Remainder of contract never executed.
Ramon Canova	Oct. 26, 1860.	Subdivision	{ 41, 42, and } { frac. 43 and } { 44 } { 40, 41, 42, } { and frac. 43 } { 41 and 42 }	25 26 27	.....	118	63	Contract not on file. Townships 42, 43, 44 south, range 25 east, finished previous to secession; approved and forwarded to Commissioner December 1, 1860. Balance of contract not executed till after January 10, 1861. Did not take the field previous to January 10, 1861. No return made.
William Mickler	Dec. 5, 1860.	Subdivision	{ frac. 41, 42 } { 43, and 44 } { 41, 42, 43, } { and frac. 44 }	22 23 and 24	March 15, 1861.	.....	.....

Respectfully submitted.

UNITED STATES SURVEYOR GENERAL'S OFFICE,
Tallahassee, Florida, August 31, 1870.

M. L. STEARNS, Surveyor General.

G.

UNITED STATES SURVEYOR GENERAL'S OFFICE,
Tallahassee, Florida, August 31, 1870.

SIR: I have the honor, in compliance with your instructions of March 30, to submit, in connection with my annual report for the fiscal year ending June 30, 1870, the following on the resources, industry, and wealth of this State. In preparing it, I have sought, both by personal interviews and by correspondence with several of the leading citizens of every county in the State, to collect information and statistics which should be trustworthy and sufficiently full to serve as a basis for intelligent estimates concerning the whole State. I regret to say that in these efforts I have been only partially successful. When I state that out of about seventy letters addressed to intelligent men, supposed to be possessed of information and to feel an interest in the prosperity of the State, only four have been answered, you will perceive some of the difficulties under which I have labored. I may state, also, that the efforts put forth in this matter have been under continual pressure of business, already too large for the limited clerical force of the office.

The fullest and most satisfactory report I have received is from Pensacola. Others, more or less full, have reached me from Appalachiecola, in Franklin County; New Troy, in Lafayette County; and Sanderson, in Baker County. From Jacksonville, Fernandina, Cedar Keys, Key West, and other important points, I have received nothing. Under these circumstances it will be impossible to give anything like an accurate view of the resources, industry, and wealth of the State at large. The statistics I have obtained are so meager that I have thought it best to give them as pertaining to the particular localities from whence they came, rather than destroy their value by losing them in a general estimate so vague and inaccurate as any made from the scanty materials at hand must necessarily be.

The general characteristics of the State as to climate, soil, surface, and productions are already quite generally understood, and the remarks on these points in my last annual report will render any extended account of them here unnecessary.

Extending from $24^{\circ} 30'$ to 31° north latitude, Florida combines many of the agricultural advantages of the temperate and tropic zones. The cereals and vegetables, and most of the grasses and fruits of the Northern States can be successfully cultivated here, while the tropical and semi-tropical fruits flourish extensively. Oranges, lemons, limes, guavas, citrons, bananas, figs, pine-apples, cocoanuts, tamarinds, as well as apples, peaches, quinces, plums, pears, and a great variety of small fruits and berries, grow abundantly and with very little attention; often with none at all. Grapes do remarkably well wherever proper attention is paid to their culture. I have seen specimens of Concord, Hartford Prolific, and some other varieties grown near Jacksonville, on a place which four years ago was wild land, the equals of any raised in other vine-growing States. The grape which appears most at home and flourishes most luxuriantly is the Scuppernong. This grows in widely separated sections of the State, and excellent wine is made from it.

I am informed that some experiments were made some years ago, in the southern part of the State, in the culture of tea and coffee, and that they gave good promise of ultimate success, but, although I have made special inquiry, I have been unable to learn the particulars of the experiments, or the precise time when they were made.

Ramie has been experimented on to some extent in various localities, but I can learn of no substantial results.

The great staples, cotton and sugar, are perfectly at home here. The latter can be brought to greater perfection in this State than in any other, as experience has demonstrated.

The surface of the State is generally flat, in some sections rolling or broken by ravines, and plentifully interspersed with ponds, lakes, brooks, and rivers. Among the chief attractions of the State are her mild and salubrious climate, so grateful and refreshing to the invalid, and her numerous sulphur and other mineral springs, which bubble from the sides of ravines, or pour forth in steady volume from fathomless holes and fissures in the rocky substratum of the country.

There has been no marked change in the prosperity of the State within the past year. My estimates of the investments and profits of the various branches of industry and trade submitted with my last report were made with care, and, with a moderate allowance for annual increase, may serve for the past year.

I proceed now to give the substance of such reports as I have been able to obtain.

In Escambia County there is very little agriculture carried on, not over 200 acres in cultivation; 5 acres in Sea Island cotton; 150 in corn; none in sugar-cane; the rest in fruit and vegetables. The average productiveness to the acre is not over 15 bushels of corn, and 200 pounds of cotton. Some experiments have been made in the culture of ramie, but no results have been reported.

There are no minerals. Of manufactures there are one steam sash and blind factory, valued at \$30,000; 17 steam saw-mills, value about \$500,000, capacity about 200,000 feet per day, valued at \$3,000. Pine wood abundant, at \$2 a cord. Pine timber abundant at 4 cents a foot, board measure, or hewn, 10 cents a foot, cubic measure. Oak wood is abundant at \$3 a cord, all convenient to market.

The commerce is principally in lumber. The total value of all shipments of lumber from the port of Pensacola from December 1, 1863, to June 1, 1870, is \$1,006,420.

Exports of lumber to foreign countries in the month of May 1870.	\$80,737 49
Coastwise shipments, same month.	40,315 95

Total value of shipments for the month.	121,053 44
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The value of dutiable commodities entered at the port of Pensacola from October 1, 1869, to April 1, 1870, is about \$30,000. There are eight steamboats and tugs in the bay, with an aggregate tonnage of 59,025 tons. Schooners lightering and trading in the bay, 31; aggregate tonnage, 64,136 tons. Of cedar only about 1,000 cubic feet have been shipped during the year; value about \$300. No live oak shipped. The lumber trade is expected to increase 10 per cent. during the coming year. A trade of about \$15,000 per annum is carried on in fish shipped by rail to Alabama. The aggregate value of property I have not obtained. The amount of capital invested in transportation of all kinds owned in and near Pensacola is from \$150,000 to \$200,000. Amount paid in salaries &c., about \$100,000.

The pine lands in this county will produce fair crops with proper cultivation, but most of the occupants of the lands are satisfied with a bare subsistence, and pay very little attention to agriculture. The grazing is not good, and there are but few cattle.

Most of the large quantity of timber cut for the Pensacola mills is taken by "right of discovery," without regard to any other right. Very few of the timber dealers pay any stumpage. They have no hesitation in cutting any and all timber found growing on the public lands.

In Franklin County there is no more attention paid to agriculture than in Escambia. There are only about 150 acres under cultivation in the county, divided into small patches of four or five acres each. There are two steam saw-mills in the county, and one in course of erection. There is also a guano, or fertilizer, factory erecting, but suspended for want of funds. There is no available water-power. Fuel and timber are abundant and easy of access.

The commerce of Appalachicola, the county seat, has been much diminished by railroads intersecting the river and carrying away to the Atlantic coast freights which formerly descended the river for shipment. The monthly average of tonnage entering and clearing at the port of Appalachicola is about 6,000 tons. Capital in vessels owned at the port, about \$14,000. Capital in merchandising, about \$20,000. In machinery, about \$30,000. The average monthly export of lumber is about 200,000 feet. There is but little cedar or live oak in the county, but an abundance of pine, ash, &c.

An effort is now making to organize a company for dredging through a bar which lies between Appalachicola and deep water. When this is accomplished, vessels of 12 feet draught can come directly to the wharves and mills. Upon the completion of this enterprise, and of the Jacksonville, Pensacola and Mobile Railroad to Chattahoochee, the carrying trade of the port must largely increase. Fish and oysters abound, and a rapid and cheap transportation would develop a large business in them. During the season as many as 2,000 barrels of oysters are often shipped in a week.

The aggregate value of real and personal estate in the county is estimated at about \$230,000. This would be far below the true value should business again spring up. Stores, renting in 1866-'67 for \$1,000 to \$1,300 per annum, can now be rented for \$100. The amount of salaries, &c., is about \$30,000.

In Lafayette County there are under cultivation, in cotton, 450 acres, producing 400 pounds per acre; in sugar, 50 acres, producing 800 pounds of sugar and 8 barrels of sirup per acre; in corn, 4,500 acres, averaging 15 bushels per acre.

There are no manufactures in this county, and no reliable water-power except at some points on the Suwannee River. There is a limited trade at Cedar Keys in lumber, amount not given.

In Baker County there are about 1,000 acres in cotton, which promise finely this year. The long staple is principally grown and is well suited to the soil and climate. The average yield is about 500 pounds per acre. Cane does well, yielding, with proper cultivation, \$250 per acre. Corn only yields about 12 bushels per acre. There are about 3,500 acres in this crop. Not much fruit grows in this county, except peaches, which flourish abundantly and are of the finest quality. They invariably mature and ripen well, such a thing as the worm, which is so troublesome in some localities, being unknown. This is a sure and profitable crop. A limited trade in lumber is carried on; amount not stated. The grazing is good. Stock of all kinds do well the year round without feeding.

I regret that I am unable to give more extended and classified information. From the best farming districts I have no report. The whole central portion of the State, extending from Gadsden, through the intervening counties, to Sumter and Orange, is a rich farming country, while the more southern part of the State is mainly devoted to cattle-raising. The eastern portion, from the St. John's River to the coast, and including Indian River, is settling up very rapidly, perhaps more so than any other part of the State, and consequently that section presents a greater variety of interests than any other. The lumber trade is very important. There are on the St. John's River some 20 steam saw-mills, three-fourths of them at or near Jacksonville. At Fernandina there are a few mills; I am unable to state how many. The amount of lumber sawed and exported I am also unable to give. The richest sugar lands in the State lie in various localities along Indian River, and offer an inexhaustible mine of wealth to the industrious and enterprising farmer. The natural advantages of the State are ample. Her one great need is a copious immigration of industrious and intelligent citizens to people her solitudes and develop her resources.

Very respectfully, your obedient servant,

M. L. STEARNS,
Surveyor General.

Hon. JOS. S. WILSON,
Commissioner General Land Office.

No. 17 B.—*Report of the surveyor general of Louisiana.*

OFFICE OF SURVEYOR GENERAL DISTRICT OF LOUISIANA,
New Orleans, September 16, 1870.

In accordance with custom, and in obedience to instructions from your office, I here with transmit my annual report for the year which ended June 30, 1870.

No appropriations having been made for continuing surveys of public lands during the fiscal year just ended in this district, the labor of this office has been directed—first to collecting, arranging, and, in many cases, renewing the archives, so as to make them of such easy access as to enable me to meet the great pressure of the public for information necessary to settle disputes now pending in the courts, which have resulted from the office being closed during the war, and in order to preserve them for reference in the future; second, to the study of the history and evidence filed for private, confirmed, unlocated land claims, for the survey and location of which application has been made; third, to the survey of isolated tracts of public lands which have been surveyed at the cost of parties in interest; and fourth, to the issuing certificates of location to satisfy private land claims under provisions of an act of June 2, 1853, and to the performance of such miscellaneous duties as are incident to all offices of this kind. It is unnecessary at this time to state the condition in which I found the records of this office, as I have done so with sufficient minuteness in former communications.

Although but one private claim was surveyed during the year, yet much time was necessary to examine the evidence on file in this office and presented by parties in interest, preliminary to the survey of other claims for which applications for survey and location had been made.

The claim referred to as having been surveyed is that of Daniel Clark, (O. B. No. 104.) It was made with great care, as the ground called for, by the partial evidence presented, covered more than 3,400 acres in the most central part of the city of New Orleans. I subsequently discovered that the deputy surveyor employed, who had been highly recommended to me by parties considered respectable, had suppressed evidence, which, being produced, proved that he was a leading spirit in a well-matured plan to inflict a great wrong on a large number of the property holders of this city. For a full report of this case I respectfully refer you to my letter, with evidence of fraud, dated June 20, 1870, in which I requested that the survey be annulled. A survey of the township, which is occupied for the most part by the city of New Orleans, is necessary to prevent in the future any attempt at such frauds. I am sorry to have to add, in this connection, that the appropriation made the last session of Congress, for the survey of this township, is not enough to secure the services of a suitable man to do the work. I have made application to the city authorities of New Orleans for an additional appropriation, which is necessary to have the work done properly. I am informed that the city council will respond favorably. There is thus a prospect of the final settlement of the most difficult problem connected with the surveys of this district.

Before explaining the tabular statements herewith transmitted, permit me to allude to two other topics, one of which is of great importance to a large class of people in this State, who have supposed their title to the lands they have been occupying and cultivating for years was complete.

The final adjustment of private land claims in the States of Florida, Louisiana, and Missouri.

The act passed for this purpose on the 22d of June, 1860, (12 U. S. Stat., p. 85,) had scarcely gone into operation before the South was plunged into civil war, and the statute practically suspended.

By act 184, of 2d of March, 1867, (14 U. S. Stat., p. 544,) the act was revived for three years. As the sixth section and other parts of the act contemplate the testimony of the surveyor general in each case filed under the law, and as the office of surveyor general of Louisiana was vacant from the 6th of February, 1861, until the 16th August, 1869, the act was practically suspended from its passage up to the latter date. It expired on the 2d of March, 1870. This period of its operation, brief as it was, was still further embarrassed by consequence of the war.

The chaos and bankruptcy which generally marked the affairs of the people diverted their attention from their titles to matters of more urgent necessity. Under the impulse of improvement which the State is now realizing, men again turn their attention to land matters, and it is now found, in many cases, that tracts bought and cultivated in good faith, held in undisturbed possession for many years, are only covered by unconfirmed claims, and are, therefore, in strictness of law, public land. These cases are arising almost daily. In some of them, it is true, the equitable owner can bring himself within the provisions of the homestead law, and thereby secure 160 acres of his land; but in nearly every case the unconfirmed claim contains more than 160 acres, and in such cases the equitable owner is constrained either to leave the residue of his land a prey to speculators, or resort to questionable arrangements with his friends for homesteading that residue in their names for his benefit. There is no doubt that a revival of the law for, say, five years would avoid these evils, lead to a general adjustment of unconfirmed claims, and remove from the courts and land offices a fruitful source of litigation and embarrassment. If this law is revived, it would seem that the principles of justice and consistency would require that it be made applicable to those portions of Mississippi and Alabama south of the thirty-first degree of north latitude, as the ancient titles in those districts which need federal recognition originally flowed from the same common fountain from which our own came.

The restoration of public lands to market.

The general homestead acts of the 20th May, 1862, (12 U. S. Stat., p. 392,) and 21st March, 1864, (13 U. S. Stat., p. 35,) were, by the act of June 21, 1866, (14 U. S. Stat., p. 66,) applied to Alabama, Mississippi, Louisiana, Arkansas, and Florida; but the first section of the latter act declares that the public land in said States shall be disposed of in no other manner. It is now believed that this provision has survived its usefulness, and is now injurious to the development of the State. It was no doubt designed to secure lands to the poor people of the South, who hitherto, as a general fact, both white and black, had been excluded from their possession. For a short time after its enactment this class of people availed themselves of its advantages; but the expense of surveying for identification the land entered, its uncleared condition, and general character of inferiority, have confined such entries to a great extent to white people, and thus the negroes, for whose especial benefit the provision was made, have to a great extent failed to avail themselves of it. The suspension of ordinary sales has not only failed to prove beneficial to the class for whom it was intended, but it is believed to be injurious to all classes.

The public lands are held in trust by the Government for the people, with a view to ultimate divestiture of the Government title when the interests of the whole people will thereby be subserved. It has never been the policy of the Government to withhold them from ordinary entry, except in limited tracts for some public necessity. It is not now claimed by the most zealous advocates of the policy now practiced that any such necessity exists in Louisiana. On the other hand, it is generally conceded that the exigencies of farming interests, and the desire of land-owners to perfect their titles, when rendered questionable by chaos and irregularities caused by the war, are often so urgent that, in default of ordinary entries, the provisions of the homestead acts are not unfrequently stretched and, in spirit at least, violated to meet such cases.

Thus frauds and irregularities are encouraged which can only be prevented by opening the lands to ordinary entry, leaving the homestead act still in force for such as desire to avail themselves of its provisions.

Tabular statements herewith transmitted are as follows:

A.—A statement of surveying contracts and orders of survey made on and since 1st October, 1860.

B.—A statement of surveying contracts and orders of survey made and issued during the period extending from the 1st October, 1860, the date of my predecessor's last report, to the 6th of February, 1861, after which his acts were considered void, which were approved and paid for prior to February 6, 1861, and not heretofore reported.

C.—A statement of contracts made by myself, and in force June 30, 1870.

D.—An estimate of appropriations necessary for the fiscal year ending June 30, 1872.

E.—Proposed surveys for the year ending June 30, 1872.

F.—List of deputy surveyors appointed by the present surveyor general of Louisiana.

I have the honor to be, very respectfully, your obedient servant,

JOHN LYNCH,

Surveyor General Louisiana.

Hon. JOSEPH S. WILSON,

Commissioner General Land Office Washington, D. C.

A.—Statement of surveying contracts in Louisiana on the 1st of October, 1860, and orders of surveys since issued.

Name of contractors.	Date.	District.	Expiration of contracts.	Estimated number of miles.	Price per mile.	Amount paid, embracing all amounts sent up.	Number of townships in contract.	Number of townships unfinished this date.	Number of townships remaining unfinished.	Remarks.
Thomas Hunter.....	June 13, 1867	Northwestern.....	*Mar. 1, 1858	100	\$8	.....	5	5	5	Contract expired by limitation, and was relet to A. L. Mershon, February 26, 1861.
Theodore Gillespie.....	Mar. 18, 1858	Southeastern.....	Jan. 1, 1860	350	8	.....	5	5	5	Notes of townships 12 and 13 south, range 8 east; townships 11, 12, and 13 south, range 9 east, returned September 29, 1860, and approved November 12, 1860; townships 9 and 10 south, ranges 8 and 9 east, and township 11, range 8 east, approved August 6, 1861. (See letter to Commissioner dated August 25, 1869.)
Joseph Gorlinski.....	June 15, 1858	Greensburg.....	May 1, 1859	30	8	\$236 15	2	2	0	Map approved April 3, 1860.
Maurice Hauke.....	Feb. 1, 1859	Southeastern.....	Mar. 1, 1860	200	8	.....	5	5	5	No returns made. Contract null.
Charles G. Hale.....	Dec. 15, 1859	Southeastern.....	Jan. 1, 1861	265	8	1,313 06	2	2	1	Township 5 south, range 8 east, returned and approved July 25, 1860, and paid for. Balance of contract expired. No returns.
Albert L. Mershon.....	Jan. 13, 1860	Northwestern.....	Jan. 1, 1861	200	8	.....	10	.....	.....	Returned, approved, and paid for.
ORDERS OF SURVEYS.										
V. Sulakowski.....	June 23, 1857	Southeastern.....			8	.....				Part of claim of Robert Martin. Register's report No. 134. Township 17 south, range 16 east. Survey arrested by threats of violence. (See Commissioner's letter of June 24, 1858.)
F. O. Cornay.....	Aug. 3, 1857	Southwestern.....			8	.....				Resurveys in townships 15 and 16 south, range 9, and township 16 south, range 10 east. No return. Surveyor now dead.
S. Valery Martin.....	Sept. 4, 1857	Southwestern.....			†	.....				Survey lots in sections 25, 26, 35, and 36, township 8 south, range six east. No returns.
Noah H. Phelps.....	Feb. 1, 1858	Southwestern.....		50	8	.....				Survey of Lake Tasse, townships 11 and 12 south, range 6 east, under decision of Commissioner's letter of September 18, 1857. No returns. Surveyor now dead.
Samuel C. Hepburn.....	Jan. 10, 1859	North of Red River.....				.....				Resurvey the claim of Stockly & Bowie, (B 1924 and 1925.) No returns.
F. G. Burbank.....	Sept. 30, 1859	Southwestern.....			8	.....				Additional surveys in townships 9 and 10 south, range 13 west. Returned, not approved. Surveys completed in field. (See letter to Commissioner, August 28, 1869.)

Noah H. Phelps.....	Sept. 30, 1859	Southwestern.....	8	Returned and approved. Surveyor now dead.
Noah H. Phelps.....	Sept. 30, 1859	Southwestern.....	8	Survey in township 9 south, range 8 east, (Cow Island.) Surveyor now dead.
V. Sulakowski.....	Dec. 14, 1859	Southeastern.....	†	Survey of lots of section 87, township 15 south, range 17 east, completed in field. Not yet returned.
Thomas Hunter.....	Jan. 10, 1860	Northwestern.....	8	Run traverse of Spanish Lake in section 14, township 9 north, range 9 west, in connection with late survey. Not returned. Reissued to Franklin, March 7, 1861.
Joseph Gorlinski.....	July 20, 1860	Southeastern.....	8	Surveys of township 18 south, range 25 east; township 19 south, ranges 23 and 26; township 20 south, ranges 23, 24, 25, 26, and 27 east; and township 21 south, range 23 east. Returns made after secession, and paid for by the State. (See letter to Commissioner, dated August 28, 1869.
George S. Walmsley.....	Sept. 12, 1860	Northwestern.....	†	Survey of claim of Emanuel Fernand. Report No. 822. Not returned.
F. O. Cornay.....	Sept. 26, 1860	Southwestern.....	†	Survey of D.C. of Charles Gravenberg, township 13 south, range 8 east. Not returned. Surveyor now dead.
Theodore Gillespie.....	Sept. 23, 1860	Greensburg.....	§	Survey of fractional section 5, township 1 south, range 4 east. Survey claim of Caleb Kemp. townships 3 and 4 south, range 5 east. Returned and approved.
Maurice Hanké.....	—, 1860	Southeastern.....	8	Resurvey of township 19 south, range 28 east, and its connections. Surveys made and returned in fourth quarter of 1860, and map approved March 1, 1861, and paid for by the State.

* Time extended to March 1, 1859.

† To be paid by parties interested.

‡ \$10 per day and expenses.

§ \$5 per day and expenses.

SURVEYOR GENERAL'S OFFICE,
New Orleans, September 10, 1870.JOHN LYNNCH,
Surveyor General.

B.—Statement of contracts and orders of surveys which have been executed in the State of Louisiana on the 1st of October, 1860, which surveys have been approved and paid for prior to the 6th February, 1861. Extract from statement marked A.

Name of contractors.	Date.	District.	Estimated number of miles.	Price per mile.	Remarks.
Theodore Gillespie	Mar. 18, 1858	Southeastern ...	380	\$8	Notes of townships 12 and 13 south, range 8 east; townships 11, 12, and 13 south, range 9 east; returned September 29, 1860; approved November 12, 1860.
Joseph Gorlinski	June 15, 1858	Greensburg	30	8	Notes returned, map approved 3d April, 1860.
Charles G. Hale	Dec. 15, 1859	Southeastern ...	265	8	Notes of township 5 south, range 8 east; returned and map approved 28th July, 1860, and paid for.
Albert L. Mershon	Jan. 13, 1860	Northwestern ...	200	8	Surveys in townships 14 and 15, range 10 west; township 15 north, range 11 west; townships 18 and 19 north, range 12 west; township 20, ranges 11 and 12 west; all returned approved and paid for prior to the 6th February, 1861.
ORDERS OF SURVEYS.					
Noah H. Phelps	Sept. 30, 1859	Southwestern ...	.....	8	Returned and approved. Surveyor now dead.
Theodore Gillespie	Sept. 28, 1860	Greensburg .....	..... (*)	(*)	Survey of fractional section 5, township 1 south, range 4 east; survey of Caleb Kemp's claim, townships 3 and 4 south, range 5 east; returned, approved, and paid for.
Maurice Hauké.	—, 1860	Southeastern ...	.....	8	Resurvey of township 19 south, range 28 east, and its connections. Surveys made and notes returned in the 4th quarter of 1860. Map approved March 1, 1861.

*\$5 per day and expenses,

JOHN LYNCH, Surveyor General.

SURVEYOR GENERAL'S OFFICE, New Orleans, September 10, 1870.

C.—Statement of surveying contracts in Louisiana on the 30th of June, 1870.

Name of contractors.	Date.	District.	Amount deposited—		Amount paid for—		Balance refunded to parties.	Remarks.
			With U. S. assistant treasurer, New Orleans.	By whom.	Survey.	Office work.		
W. H. Wilder.....	Sept. 10, 1869	Southeastern	\$150 00	Mrs. Gaines	\$88 40	\$30 00	\$31 60	Survey of claim of Daniel Clark (O. B. No. 104.) in New Orleans Township, returned and approved. Since this approval the surveyor general discovered evidence which satisfied him that the survey was fraudulently made, and requested to have it annulled. See his report to Commissioner, dated June 20, 1870.
Robert Boyd.....	Nov. 8, 1869	North of Red River.	100 00	T. Hopkins	67 00	15 00	18 00	Survey of Hopkins Island, in township 19 north, range 14 east, returned and approved.

JOHN LYNCH, Surveyor General La.

SURVEYOR GENERAL'S OFFICE, New Orleans, September 10, 1870.

D.—*Estimate of funds to be appropriated for the fiscal year ending June 30, 1872, for surveying in Louisiana, for compensation of surveyor general and the clerks in his office, and for contingent expenses of the surveyor general's office.*

PROPOSED SURVEYS.

Southwestern district.....	\$7,200
Southeastern district.....	3,840
Northwestern district.....	1,200
	<u>\$12,240</u>

FOR SALARIES.

Salary of surveyor general.....	2,000
Salary of chief clerk.....	1,500
Salary of two draughtsmen, protractors, and one copyist.....	3,000
	<u>6,500</u>

CONTINGENT EXPENSES.

Stationery, furniture, postage, book-binding, freight, fuel, servant-hire, &c.....	2,500
	<u>2,500</u>

Total amount of appropriations required for the year ending June 30, 1872 21,240

JOHN LYNCH,
Surveyor General La.

NEW ORLEANS, *September 10, 1870.*

F.—*List of deputy surveyors in the State of Louisiana holding commission from John Lynch, surveyor general of Louisiana.*

Names.	Residence.	Date of commission.	Date of oath.	How employed.
William H. Williams. W. H. Wilder.....	Carrollton... New Orleans.	Aug. 24, 1869 Sept. 9, 1869	Aug. 28, 1869 Sept. 9, 1869	Survey of the claim of Daniel Clark, (O. B. No. 104.) Commission revoked April 8, 1870, on account of fraudulent survey.
Robert Boyd.....	New Orleans.	Oct. 2, 1869	Oct. 11, 1869	Surveys in district north of Red River, under contract, paid by parties interested.
R. W. Todd..... W. H. E. Hangen.....	Jefferson.... Mandeville..	Jan. 13, 1870 July 21, 1870	..... July 21, 1870	Contract in southwestern district canceled by Commissioner's letter of August 5, 1870.

JOHN LYNCH,
Surveyor General La.

SURVEYOR GENERAL'S OFFICE, *New Orleans, September 10, 1870.*

E.—*Proposed surveys in the State of Louisiana for the fiscal year ending June 30, 1872.*

District.	Township and range.	Estimated number of miles.	Price per mile.	Total.	Remarks.		
Southwestern.	Townships 8 and 9 south, range 1 west.....	125	\$8	\$1,000	Proposed in estimates of former surveyor general. Further examination and report required by Commissioner's letter of June 28, 1855. Necessity explained in surveyor general's annual report of 1858. Under Commissioner's decision of September 13, 1857.		
	Township 10 south, range 2 west; township 10 south, range 3 west.....	200	8	1,600			
	Township 15 south, range 7 east.....	30	8	240			
	Township 3 south, range 3 east.....	160	8	1,280			
	Township 13 south, range 6 east.....	10	8	80			
	Township 6 south, range 2 east.....	125	8	1,000			
	Townships 6 and 7 south, range 5 east.....	200	8	1,600			
	Townships 11 and 12 south, range 6 east.....	50	8	400			
	Total for southwestern district.....			7,200			
	Township 8 south, range 3 east.....	75	8	600			
Southeastern, east of river. Southeastern, west of river.	Township 12 south, range 14 east—30 miles; township 15 south, range 12 east—10 miles; township 15 south, range 17 east, and 18 east, south of Bayou Lafourche—200 miles. Partial surveys:	240	8	1,920	Proposed in estimates of former surveyor general. Enumerated in list accompanying report of H. C. De Ahua, special agent, February 1, 1867.		
	Township 18 south, ranges 16, 18, 20, and 21.....	150	8	1,200			
	Township 19 south, ranges 16, 17, 19, to 23, inclusive.....						
	Township 20 south, ranges 19 to 30, inclusive.....						
	Township 21 south, ranges 15 to 30, inclusive.....	15	8	120			
	Section 119, range 20 east, and sections 1, 2, 3, 4, and 10, inclusive. Extensions of section lines in townships 13 and 14 south, range 20 east, southeastern district, through rejected portion of Paul Toup's claim.						
	Total for southeastern district.....						
	Connections of the section lines with the exterior boundaries of the Las Ormigas and La Nana claims, in—			3,840			
	Northwestern.	Township 5 north, ranges 11, 12, and 13 west.....	150	8		1,200	Enumerated in list accompanying report of H. C. De Ahua, special agent, February 1, 1867.
		Township 6 north, ranges 10, 11, 13, and 14 west.....					
Township 7 north, ranges 10, 11, and 12 west.....							
Township 8 north, ranges 11, 12, 13, and 14 west.....							
Township 9 north, ranges 11 and 12 west.....							
Township 10 north, ranges 12 and 15 west.....							
Township 11 north, ranges 11, 12, 13, and 14 west.....							
Total for northwestern district.....				1,200			
Total of proposed surveys.....				12,240			

NEW ORLEANS, September 10, 1870.

JOHN LYNCH, Surveyor General La.

No. 17 C.—*Report of the surveyor general of Minnesota.*

SURVEYOR GENERAL'S OFFICE,
St. Paul, Minnesota, August 10, 1870.

SIR: I have the honor to submit my annual report, in duplicate, with the accompanying tabular statements, showing the progress of the public surveys, and the amount of office work performed, since the date of my last annual report.

The surveys undertaken, or under contract, at the date of my last annual report, have nearly all been completed and the notes transmitted to this office. The exceptions are as follows: Township 138 north, of range 31 west, of the 5th principal meridian, embraced in the contract of T. B. Walker, of June 23, 1869, is unsurveyed; the limitation of his contract has expired and no extension has been granted. With the exception of township 45 north, of ranges 17 and 18 west, of the 5th principal meridian, none of the townships embraced in the contract of B. F. Jenness, of June 25, 1869, have been surveyed. Sufficient reasons for the delay having been shown, the time for the completion of the survey has been extended, under the approval of the Commissioner of the General Land Office, to November 1 of the current year.

Township 138 north, of range 38 west, included in the instructions of October 8, 1869, to Messrs. Wright & Beardsley, is also unsurveyed, they having been released from its survey under the approval of the Commissioner.

Of the surveyed townships, with the exception of the survey of the subdivisional lines of five townships, to wit: 135 and 136 north, of range 43 west, and 134, 135, and 136 north, of range 44 west, the notes of survey have been examined and approved, the original plats made, and copies thereof, with transcripts of the field-notes, transmitted to the General Land Office. The register's plats and descriptive notes are being made and forwarded to the local land offices with reasonable dispatch, a considerable part of them having been already transmitted.

The appropriation for public surveys in this district for the present year was made about the close of the session of Congress. Official notification thereof reached me August 3. It has been impossible for me, in the time since notification, to enter into contracts with and appoint all my deputies. Hence the surveys for the current year are hardly commenced. I believe the fact of my appointments sufficiently implies my confidence that the surveys under contract will be efficiently and faithfully executed. That the generous appropriation for field-work for the current year will go far toward enabling me to meet the increasing demands for settlement, is gratifying to me in the highest degree. Circumscribed as the area surveyed has been in the last few years by insufficient appropriations, I have, since assuming the charge of this district, been made unhappily to realize the importunity arising from considerably settled localities for an extension of surveys, to which I have been impotent to accede. The concession to the demands of settlement, which the appropriation enables me to make, is but justice to the settler, and therefore cannot be impolitic for the Government. I shall endeavor, primarily, to meet the demands of localities which are being the most rapidly settled.

A special deposit of \$1,370 was made October 4, 1869, by the St. Paul and Sioux City Railroad Company, for the survey of township 104 north, of range 44 west, and 101 and 102 north, range 45 west, of the 5th principal meridian.

Also on the same date, by A. H. Wilder, a deposit of \$500, for the survey of township 137 north, of range 38 west, of the 5th principal meridian. The surveys have been made and approved, and the plats and transcript of notes transmitted to the General Land Office, and the register's plats and descriptive notes sent to the local land offices.

As timber agent, my attention to cases of trespass on the public lands has been required. Since assuming the duties of the office, to and including the 30th day of May, 1870, I have collected from trespassers, and deposited with the United States depository, \$5,532 60. It has been my endeavor to prosecute these examinations with efficiency and vigor, and I have successfully availed myself of the services of experienced and competent examiners. I have confined my examinations of trespass to pine lands, for the reason that the petty individual depredations on other timbered lands are too isolated and insufficient to justify the expense of examination. Of the trespasses on pine lands, I believe the proportion not discovered is comparatively small. I have experienced little difficulty in the collections of stumpage and expenses of examination.

I append tabular statements, in the usual form, as indicative of the condition and progress of the field and office work since the date of my last annual report.

I present the following abstract of office work:

The original notes of 2,547 miles, 79 chains, and 99 links of subdivisional lines (inclusive of meanders) have been examined, the contents of all fractional lots calculated and placed on the plats, the original plats made, and the Commissioner's plats made and duly transmitted.

Of township lines, 55 miles, 40 chains, and 11 links have been examined and placed on file, and transcripts made and transmitted.

Forty-two township plats have been constructed from the original notes, duplicates

made and transmitted to the General Land Office, and 19 copies of them made and transmitted to the local land offices. In addition to this the register's plats of 24 townships have been made and forwarded to the local offices, making an aggregate of 127 plats made and sent out from the office since the date of the last annual report.

Four thousand one hundred and thirty-one pages of transcripts for the Department, and for record in this office, have been made, compared, and indexed, with full title-pages to each township. This includes transcripts of a few townships made prior to, but not embraced in, last year's report.

There have been made for the local land offices descriptive notes of 54 townships, and an equal number for file in this office, making in all an equivalent of descriptive notes for 108 townships. (The notes of a few towns not indicated in last annual report are included). These notes are an abstract of the field-notes to the extent of giving, the establishment of exterior, interior, and meander corners, with description of soil timber, &c.

In addition, the field-notes have been examined, and complete lists of such lands as are shown thereby to be swamp lands, and as such inuring to the State, not previously reported, made in the manner required by previous instructions, and duly transmitted to the General Land Office and local land offices. In these lists are included all the selections made under the surveys of 1868, and in the Jackson and Litchfield land districts, those embraced in the surveys of 1869.

A township and sectional topographical map of the State was prepared to accompany the last annual report, but was not completed for transmission till November 6, 1869. Its preparation was attended with the utmost care, and involved eleven weeks of close labor.

The miscellaneous business of the office, preparing contracts and bonds, diagrams of the exterior township lines for deputy surveyors, the general correspondence of the office and record thereof, &c., involves no inconsiderable time and labor, but admits of no detailed statement.

It is not without a degree of pride that I present this report, indicative, I believe, of a greater amount of office work performed, relative to the clerical force employed, than any preceding year can show.

The estimates for field work for next year I find myself unable to complete till I shall have more fully located the surveys for the current year. The estimates for office work will, of course, depend upon the extent and character of the surveys. I beg to defer the transmission of these estimates for a few days till I shall have completed the organization of the current year's surveys. I will then make and transmit my estimates, as supplemental hereto.

The annual tabular statements accompanying this report are as follows:

A.—Amount, character, locality, and present condition of the surveys in the field.

B.—Original, Commissioner's, and register's plats made and copied, with date of transmission.

C.—Statement of townships surveyed, with their area.

D.—Abstract statement of the incidental expenses of the office for the year ending June 30, 1870.

I am, very respectfully, your obedient servant,

C. D. DAVISON,
Surveyor General.

Hbn. JOSEPH S. WILSON,
Commissioner of the General Land Office.

A.—Statement showing the amount, character, locality, and present condition of the surveys in Minnesota, uncompleted at, and undertaken since, the date of the last annual report.

Name of deputy.	Date of contract.	Character of work.	Amount and locality.	Present condition.
Nathan Butler.....	Sept. 11, 1868	Township lines and subdivisions.	Township lines between townships 46 and 47, range 29 west; range lines between ranges 28 and 29, 29 and 30, township 46 north. Subdivision of township 46 north, range 29 west, 4th meridian; townships 54 and 55 north, range 27 west, 4th meridian.	Surveys completed and approved, and notes and plats transmitted.
Oscar E. Garrison.....	May 28, 1869	Township lines and subdivisions.	Township lines between townships 52 and 53 north, range 26 and 27 west, of 4th principal meridian; range line between ranges 25 and 26, 26 and 27 west, of 4th principal meridian, of townships 52 and 53 north. Subdivision of townships 52 and 53 north, ranges 26 and 27 west, and township 56 north, range 25 west, 4th principal meridian.	Surveys completed and approved, and notes and plats transmitted.
Wright and Beardsley...	June 4, 1869	Township lines and subdivisions.	Township lines between townships 121 and 122 north, range 46 west, 5th principal meridian. Subdivision of township 120 north, range 42 west, and fractional townships north of the Minnesota River, viz: 118 and 119 north, range 42 west, 5th principal meridian; 119 and 120 north, range 43 west, 5th principal meridian; 120 north, range 44 west, 5th principal meridian; 120 and 121 north, range 45 west, 5th principal meridian; 121 north, range 46 west, 5th principal meridian.	Surveys completed and approved, and notes and plats transmitted.
T. B. Walker	June 23, 1869	Subdivision lines...	Subdivision lines of townships 55 and 56 north, range 24 west, 4th principal meridian; 56 north, range 25 west, 4th principal meridian; 135 north, range 30 west, 5th principal meridian; 134 and 138 north, range 31 west, 5th principal meridian.	Township 138 north, range 31 west, is unsurveyed. In the remainder of the townships the surveys have been completed and approved, and the notes and plats transmitted.
Jenness B. F.....	June 25, 1869	Township lines and subdivisions.	Township lines between townships 44 and 45 north, ranges 22 and 23 west, 4th principal meridian, townships 45 and 46, 46 and 47 north, ranges 20, 21, 22, and 23 west, 4th principal meridian. Range lines between ranges 22 and 23 west, of township 44 north. Range lines between ranges 20 and 21, 21 and 22, 22 and 23 west, of townships 45, 46, and 47 north. Range lines, between ranges 23 and 24 west, of townships 46 and 47 north. Subdivision lines of township 47 north, range 22 west, 4th principal meridian; township 47 north, range 23 west, 4th principal meridian; also township 45 north, ranges 17 and 18 west.	All the township and range lines are unsurveyed; as are also subdivision lines of township 47, ranges 22 and 23. The time for the completion of the survey has been extended to November 1, 1870. The remaining surveys are completed and approved, and the notes and plats transmitted.
Wright and Beardsley...	July 13, 1869	Subdivision lines...	Subdivision lines of township 131 north, range 44 west, 5th principal meridian; 131 north, range 45 west, 5th principal meridian; 131 north, range 46 west, 5th principal meridian; 129, and 131 north, range 47 west, 5th principal meridian, (fractional); 131, 135, and 136 north, range 43 west, 5th principal meridian; 134, 135, and 136 north, range 41 west, 5th principal meridian.	Through inadvertence township 134, ranges 43, 44 and 45, was not included in the list sent with last annual report. The surveys of township 131, ranges 44, 45, 46; townships 129, 130, 131, range 47; township 134, range 43; and 134, 135, 136, range 45, have been completed and ap-

R. H. L. Jewett	July 30, 1869	Subdivision lines...	principal meridian; 134, 135, and 136 north, range 45 west, 5th principal meridian.	proved, and the notes and plats transmitted. The remaining townships have been surveyed, and the field books returned to this office, but they have not yet been examined and approved. Surveys completed and approved, and notes and plats transmitted.
Wright and Beardsley ...	Oct. 8, 1869 (Instructions)	Subdivision lines...	Subdivision lines of townships 101, 102, 103, 104 north, range 43 west, 5th principal meridian.	Township 138, range 33, released under instructions of Commissioner of General Land Office. Surveys of the remaining towns completed and approved, and notes and plats transmitted.
George G. Beardsley	Jan. 7, 1870 (Instructions)	Island in section 14.	An island estimated to contain 20 acres in township 120 north, range 35 west, 5th principal meridian.	Field-notes returned to this office.
Orville Smith	Jan. 10, 1870	Subdivision lines...	Subdivision lines of township 140 north, ranges 28 and 29 west, 5th principal meridian.	Field-notes returned to this office.
Nathan Butler	Feb. 14, 1870	Township lines and subdivisions.	Township lines between fractional townships 46 and 47 north, range 30 west, 4th meridian.	Field-notes returned to this office.
Jewett and Howe	Oct. 5, 1869 (Instructions)	Subdivision lines...	Subdivision lines of township 104 north, range 44 west, 5th principal meridian; 101 and 102 north, range 45 west, 5th principal meridian.	Surveys completed and approved, and notes and plats transmitted.

C. D. DAVISON, *Surveyor General.*

SURVEYOR GENERAL'S OFFICE, St. Paul August 10 1870.

B.—Statement of original, Commissioner's, and registers' plats made and copied, date of transmission to the General Land Office and local land offices, from the date of last annual report.

Description.	Land office.	Original.	Commissioner's	When trans- mitted.	Registers'.	When trans- mitted.	Total.
Township 45, range 17	Taylor's Falls	1	1	Jan. 27, 1870			2
Township 45, range 18	do	1	1	Jan. 27, 1870			2
Township 55, range 24	St. Cloud	1	1	May 19, 1870			2
Township 56, range 24	do	1	1	May 19, 1870			2
Township 56, range 25	do	1	1	Nov. 20, 1869	1	Dec. 8, 1869	3
Township 52, range 26	do	1	1	Nov. 20, 1869	1	Apr. 20, 1870	3
Township 53, range 26	do	1	1	Nov. 20, 1869	1	Apr. 20, 1870	3
Township 56, range 26	do	1	1	May 19, 1870			2
Township 52, range 27	do	1	1	Nov. 20, 1869			2
Township 53, range 27	do	1	1	May 27, 1870			2
Township 54, range 27	do	1	1	June 21, 1870			2
Township 55, range 27	do	1	1	June 21, 1870			2
Township 46, range 29	do	1	1	Apr. 14, 1870	1	May 31, 1870	3
Township 134, range 30	do				1	Apr. 20, 1870	1
Township 135, range 30	do	1	1	Jan. 27, 1870	1	Apr. 20, 1870	3
Township 134, range 31	do	1	1	Jan. 27, 1870	1	Apr. 20, 1870	3
Township 137, range 38	Alexandria	1	1	Apr. 11, 1870	1	May 31, 1870	3
Township 131, range 41	do	1	1	July 11, 1870			2
Township 132, range 41	do	1	1	July 11, 1870			2
Township 118, range 42	Litchfield				1	Apr. 8, 1870	1
Township 119, range 42	do				1	Apr. 8, 1870	1
Township 129, range 42	do	1	1	Dec. 22, 1869	1	Apr. 8, 1870	3
Township 125, range 42	Alexandria				1	Oct. 25, 1869	1
Township 126, range 42	do				1	Oct. 25, 1869	1
Township 127, range 42	do				1	Oct. 25, 1869	1
Township 101, range 43	Jackson	1	1	Dec. 6, 1869	1	May 27, 1870	3
Township 102, range 43	do	1	1	Dec. 6, 1869	1	May 27, 1870	3
Township 103, range 43	do	1	1	Feb. 5, 1870	1	May 27, 1870	3
Township 104, range 43	do	1	1	Feb. 5, 1870	1	May 27, 1870	3
Township 119, range 43	Litchfield				1	Apr. 8, 1870	1
Township 120, range 43	do	1	1	Dec. 22, 1869	1	Apr. 8, 1870	3
Township 125, range 43	Alexandria				1	Oct. 25, 1869	1
Township 126, range 43	do				1	Oct. 25, 1869	1
Township 127, range 43	do				1	Oct. 25, 1869	1
Township 128, range 43	do				1	Oct. 25, 1869	1
Township 129, range 43	do				1	Oct. 25, 1869	1
Township 130, range 43	do				1	Oct. 25, 1869	1
Township 134, range 43	do	1	1	July 19, 1870			2
Township 101, range 44	Jackson	1	1	Feb. 5, 1870	1	May 27, 1870	3
Township 102, range 44	do	1	1	Feb. 5, 1870	1	May 27, 1870	3
Township 103, range 44	do	1	1	Feb. 5, 1870	1	May 27, 1870	3
Township 104, range 44	do	1	1	Mar. 5, 1870	1	May 27, 1870	3
Township 127, range 44	Alexandria				1	Oct. 25, 1869	1
Township 120, range 44	Litchfield	1	1	Dec. 22, 1869	1	Apr. 8, 1870	3
Township 128, range 44	Alexandria				1	Oct. 25, 1869	1
Township 129, range 44	do				1	Oct. 25, 1869	1
Township 131, range 44	do	1	1	Mar. 3, 1870			2
Township 101, range 45	Jackson	1	1	Mar. 5, 1870	1	May 27, 1870	3
Township 102, range 45	do	1	1	Mar. 5, 1870	1	May 27, 1870	3
Township 120, range 45	Litchfield	1	1	Dec. 22, 1869	1	Apr. 8, 1870	3
Township 121, range 45	St. Cloud	1	1	Dec. 22, 1869			2
Township 128, range 45	Alexandria				1	Oct. 25, 1869	1
Township 129, range 45	do				1	Oct. 25, 1869	1
Township 130, range 45	do				1	Oct. 25, 1869	1
Township 131, range 45	do	1	1	Mar. 3, 1870			2
Township 134, range 45	do	1	1	Aug. 10, 1870			2
Township 135, range 45	do	1	1	July 19, 1870			2
Township 136, range 45	do	1	1	Aug. 10, 1870			2
Township 121, range 46	St. Cloud	1	1	May 27, 1870			2
Township 129, range 46	Alexandria				1	Oct. 25, 1869	1
Township 130, range 46	do				1	Oct. 25, 1869	1
Township 131, range 46	do	1	1	Mar. 3, 1870			2
Township 129, range 47	do	1	1	Mar. 3, 1870			2
Township 130, range 47	do	1	1	Mar. 3, 1870			2
Township 131, range 47	do	1	1	Mar. 3, 1870			2
Township 43, range 27*	Taylor's Falls				1	Oct. 7, 1869	1

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* Supplemental registers' plat to supply the place of one gone from the Land Office.

C. D. DAVISON, Surveyor General.

C.—Statement of townships surveyed from July 1, 1869, to June 30, 1870.

No.	Township.	Range.	Area.	No.	Township.	Range.	Area.
1	45	17	23, 375. 64	25	104	43	23, 013. 75
2	45	18	22, 469. 62	26	119	43	3, 135. 27
3	55	24	20, 321. 23	27	129	43	21, 674. 44
4	56	24	22, 397. 52	28	134	43	20, 184. 18
5	56	25	22, 100. 70	29	101	44	23, 035. 46
6	52	26	22, 337. 14	30	102	44	22, 929. 55
7	53	26	21, 681. 20	31	103	44	23, 078. 03
8	56	26	19, 239. 98	32	104	44	23, 081. 10
9	52	27	13, 718. 70	33	120	44	8, 951. 43
10	53	27	12, 638. 26	34	131	44	22, 031. 06
11	54	27	12, 165. 46	35	101	45	22, 948. 32
12	55	27	11, 584. 13	36	102	45	22, 941. 68
13	46	29	21, 161. 06	37	120	45	2, 235. 40
14	135	30	23, 268. 06	38	121	45	21, 134. 34
15	134	31	24, 721. 77	39	131	45	22, 705. 51
16	137	38	22, 601. 75	40	134	45	22, 499. 10
17	131	41	20, 357. 85	41	135	45	22, 469. 59
18	132	41	19, 391. 84	42	136	45	22, 272. 94
19	118	42	3, 919. 37	43	121	46	10, 152. 73
20	119	42	21, 008. 23	44	131	46	22, 905. 44
21	120	42	22, 986. 21	45	129	47	9, 997. 65
22	101	43	23, 024. 82	46	130	47	8, 965. 15
23	102	43	22, 949. 34	47	131	47	11, 633. 88
24	103	43	23, 011. 74				
Total number of acres surveyed							886, 398. 62
Previously reported, (1,254)							25, 034, 634. 02
Total number of acres surveyed to date, i. e. June 30, 1870							25,921, 032. 64

SURVEYOR GENERAL'S OFFICE,
St. Paul, August 10, 1870.

C. D. DAVISON, *Surveyor General.*

Abstract statement of the incidental expenses of the surveyor general's office from July 1, 1869, to June 30, 1870.

For quarter ending September 30, 1869	\$432 90
For quarter ending December 31, 1869	470 59
For quarter ending March 31, 1870	477 85
For quarter ending June 30, 1870	378 60
Total	1,759 94

C. D. DAVISON,
Surveyor General.

SURVEYOR GENERAL'S OFFICE,
St. Paul, August 10, 1870.

No. 17 D.—Report of the surveyor general of Dakota.

SURVEYOR GENERAL'S OFFICE,
Yankton, Dakota Territory, August 27, 1870.

SIR: I have the honor to submit the following report of the field and office work performed in this surveying district since the date of my last annual report, together with the usual statements relating thereto, and marked A, B, and C.

SURVEYS.

First. All the proper township and range lines between the line on parallel of 43° 30' north latitude and the first standard parallel north, and between the 7th and 9th guide meridians, amounting to 543 miles 57 chains and 56 links.

Second. The following named 25 townships and fractional townships west of the 5th principal meridian have been subdivided into sections, viz: Townships 105, 106, 107, and 108 north, of ranges 47 and 48; townships 105 and 106 north, of ranges 49, 50, 51, and 52; township 101 north, of ranges 53, 54, 55, 56, 57, 58, and 59; township 102 north, of ranges 58 and 59; an island in the Missouri River, in township 91 north, of range 51; amounting to 1,436 miles 54 chains and 7 links.

OFFICE WORK.

First. The field-notes of all the above-described surveys have been carefully examined and approved.

Second. Diagrams have been made, and the field-notes transcribed, of the survey of the above-described township lines, and transmitted to the General Land Office.

Third. The field-notes of the subdivision of the above-described 25 townships and island have been protracted, triplicate maps of each one thereof constructed, and the maps filed and transmitted, as required by law.

Fourth. Transcripts have been prepared and transmitted to the General Land Office of the entire field-notes of each of the 25 townships and island last above named, all of which have been carefully compared with the originals, and each has been prefaced by an index diagram.

Fifth. Lists descriptive of the land and all the corners of the above-named townships have been made, carefully compared with the original field-notes, certified, and transmitted to the local land office at Vermillion.

Sixth. The usual amount of miscellaneous business has been performed, such as preparing contracts and bonds, (in quadruplicate,) with instructions and diagrams of the exterior boundaries of their surveys, for the use of deputies, making out and recording their accounts and the accounts with the Government, the general correspondence of the office, and recording the same, together with other work; all of which occupies a large amount of time, but of which no regular or detailed statement can well be given.

MISCELLANEOUS.

The other surveying operations under this office have been slight. The principal has been the survey, into 80-acre tracts, of a portion of the Yaneton Sioux Indian reservation. Deputy Moses K. Armstrong, who has been charged with this duty, under contract, has nearly completed the work in the field, and the return of notes and plats of the entire work will be made at an early day. No surveys have, as yet, been executed, to be paid for out of the appropriation for the fiscal year ending June 30, 1871. In communications heretofore made, the scheme for this year's service has been very accurately and circumstantially detailed. This plan will not be departed from in any material point.

It has been impossible, though much effort has been made by me, personally, in different parts of the Territory, to obtain, in any reliable shape, or to any valuable extent, the estimates requested in your circular of March 30, 1870. The census returns alone can give the results, and it is not possible for me to inquire, with anything like the same detailed accuracy.

There are no railroads built or in process of building, and but one very small steamer (a ferry-boat at Yaneton) owned in the Territory. There are two stage lines of some importance; one through Yaneton and up the Missouri River, and the other up the valley of the Red River of the North to Pembina. Both these lines are but parts of greater companies, owned entirely without the Territory, in Iowa and Minnesota, and making no returns here. All the carrying service in the Territory, whether of freights or passengers, by water or land, is therefore performed by companies wholly without our limits, and this is involved alike with that of Montana and the States below us on the river. We have no boards of trade, chambers of commerce, or any mercantile or business associations whatever beyond the range of large partnerships. There are a few agricultural associations, but these have collected no statistics, while manufactures, except the most ordinary domestic kinds, are as yet unknown. I should except from this several excellent flouring mills, and numerous saw-mills. Nor should it be inferred that we have no travel or commercial activity. These have quite doubled in amount over the previous year, but the carrying is done upon our rivers by outside capital. It is, for these reasons, impossible, except by the most laborious efforts at a full census return, to give any trustworthy approximation to the several aggregates requested. We shall therefore give in this report all we deem important to state.

Leaving out of present account the rich timber and mineral resources of the region west of the Missouri River, because apparently to remain in possession of the Indian tribes, the rest of Dakota remains a purely agricultural region in its characteristics. This part is about equally divided by the general course of the Dakota or James River, which enters the Missouri near Yaneton. That part east of the Dakota River is, for quality of soil, established character of productions, and general productive fertility, the best part of the Territory. To this may be added the southern one-fourth of that part west of the Dakota Valley. This region, including the valleys of the Big Sioux, Vermillion, Dakota, and Missouri Rivers, and that of the Red River of the North, is the part in which immigrants will be interested for many years. Except the valley of the Red River of the North, this has been personally visited by me during the present summer. The result of careful investigation of soil, water, stone, timber, and products, gives me a higher opinion of it than ever before entertained. The region is divided into

rich valleys, in which the soil is a deep alluvial of the finest possible quality; then, back of these, bench lands or second bottoms of uniformly dry and rich lands of the best quality for general agriculture, and the balance intermediate between these is rolling prairie. The valleys may be divided into about one-third superior grass lands, and two-thirds entirely suitable for general agriculture. The bench lands are all good farming lands of finely pulverized soil, and generally of easier culture than the bottoms. The rolling prairies comprise about two-thirds of the whole. These are shaded off in quality from the bench lands to occasional ridges, which are sometimes stony upon the surface, varying from first-class to third-rate soils; about one-third of each. In the valleys, and sometimes upon the second bottoms, under the deep soil, is a fine, sandy subsoil almost without clay. Upon the higher lands there is generally found a deep substratum of clay, sometimes many feet in thickness, through which it is necessary to dig for water. Upon this is a fine prairie soil, composed of decayed and burned vegetable matter, generally slightly mingled with a finely pulverized clay and sand. All the soils are light, and warm, and quick to germinate the spring seed. Upon the general upland prairies are frequent and constantly recurring depressions and valley-like formations, which are nearly as good as the bench lands, varying in size from 40 acres to several sections, and they give to the general surface a beautifully varying appearance. These are often found also in these small lakes or marshes, many of which supply water during the driest seasons. About these and in lower depressions, quite without water, are very rich and luxuriant natural meadows, furnishing excellent grass in superabundance. Upon the bottom lands and elsewhere are grown wonderful crops of grass, with rushes and various plants in the timber close to the streams. In this region also water is generally well supplied, pure, fresh, wholesome, and free from alkaline trace. In three or four places only have these been discovered in any perceptible degree, and these are confined to the immediate localities, and have pure water near them. In some localities the water obtained by digging contains traces of sulphur and iron together, but not in large percentage, nor enough to prevent its acceptable use for all purposes. A description of such a region is incomplete without some account of its geological formation, and this has not been carefully determined by competent persons.

I find at Sioux Falls a great mass of red quartzite, (some call it red granite,) which is entirely without fossils. It belongs to the azoic period of rocks. It is metamorphic, having been changed by aqueous or igneous agency from its primitive materials. When finely pulverized its particles seem to show quartz, feldspar, and mica, which is the reason for supposing it a granitic rock. This is the southern point or angle of this formation. The same is found in Minnesota and Northern Wisconsin, in places, in a northeastern direction from Sioux Falls, even to near the shores of Lake Superior. It is also found in places at considerable distance to the northwest of Sioux Falls, leaving that place the extreme southern point of the formation. North of this it is not seen much, and to the north of these lines lies the lake country of Dakota and Minnesota, inducing the opinion that this formation is the underlying cause of these lakes. At Sioux Falls the Big Sioux River breaks through and over this rock, descending about 110 feet within half a mile, in a beautiful series of rapids and water-falls.

Overlying this at Sioux Falls is a finely-grained white or yellowish sandstone of very friable texture. When finely pulverized—which may be done in the hand easily—its particles present a very similar appearance to those of the red quartzite, except, as is supposed, the latter takes its rosy or light-red tinge from the presence of colored feldspar. This sandstone is also of the azoic age, and is amorphous, being possibly the primitive rock from which the metamorphic red quartzite was formed. The sandstone does not crop out in large quantities. Above the red quartzite by the river bank, above the falls and in other places, and in larger amount about 40 miles east of north from Sioux Falls, appears the red pipestone of the Indians, so closely associated with their traditions and legendary religious ideas. These are the principal rocks of the region until we find the white or blue-tinted chalk-stone in the bluffs near Yankton and above. Over all this region is the drift formation, with boulders scattered over the surface, and upon the higher ridges various kinds of small pebbles. Many of these are of the red quartzite. The boulders are partly granite, but mainly limestone; and in some places these are gathered in large amount and manufactured into very superior lime. Without any analysis of soils their mineral characteristics are difficult to determine, but from the presence of considerable amounts of limestone in various shapes it is believed the soil has a large supply of this, giving its fine cereal-producing quality. In digging wells over this region pieces of lime are often found; also fragments of lignite or half-formed coal. I have seen pieces which were nearly like charcoal, and had attached to them resinous lumps, showing they were formed from burnt pine and then carried here by drift. At considerable depth in the clay large pieces of partly-petrified wood have been found, generally showing the grain of the cottonwood.

Of the valleys mentioned, that of the Big Sioux is the best. It extends along the eastern border from the southeast corner of the Territory, about 150 miles north. Sioux Falls are at the central point of this. The valley grows broader, generally, as it is ascended, while the bordering bluffs become lower and are less abrupt. About 45 miles

above its mouth, at the village of Canton, the bluffs cease almost entirely, except in the immediate vicinity of Sioux Falls. The river overflows a small breadth of land near it, and this is the grass land where not covered with timber. Above Canton the valley spreads out grandly and merges gradually into the rolling prairie land. To this point the timber is in better supply. It is scarce again until Sioux Falls is reached, and again grows more abundant upon the streams and lakes about the headwaters of the stream. As far up as Canton the valley and best adjoining lands are generally taken. Above that they are just commenced to be settled since the vacation of the Fort Dakota military reserve. Above Sioux Falls the rich lands extend very broadly until the whole region is one vast body of superior lands. About the lakes and along the streams there are numerous inviting homes which will delight the settler.

The timber and water supply, with its fine grazing facilities, justifies the early settlement of that part by a heavy population. At Richland, near the mouth of Brulé Creek, Eden, Fairview, Canton, and Sioux Falls are large and rapidly augmenting settlements, which are centers from which the adjacent country is filling up. The region is easily reached across Northern Iowa and Southern Minnesota late in the summer or in the fall; but during the spring, wagons should take a more southern route through Iowa to Sioux City; thence up the river. The Big Sioux River is a clear, rapid stream of pure water, with firm shores and gravelly and stony bottom. It has numerous rapid places, and its descent is greater than that of any other stream in the Territory, affording numerous fine water-powers, some of which are now used and others being improved. The Big Sioux Valley, and above it to Big Stone Lake, must, at an early day, be a finely improved, productive, and prosperous country, and there are hardly more obstacles in the way of this than were presented in Northern Illinois or Southern Wisconsin, while it is more available than the adjoining parts of Iowa or Minnesota. The present has been a very dry summer, with but very slight rain-fall since June 1. Yet crops of wheat were grown in the valley, upon ground broken three years, which thrashed out 32 bushels per acre, and the product was of the best quality. Corn is growing near the same, some fields of which will yield 70 bushels per acre, and some claim more.

The Brulé Creek Valley is smaller and joins that of the Sioux near its mouth. This is a very beautiful and attractive body of land, now nearly all taken. I received reports from several threshing machines in that region, which gave averages of from 17 to 20 bushels of wheat per acre this year, and in some instances single crops that reached 30 bushels. Next west of this is the Vermillion Valley, which is equal to any for natural beauty, for a distance of 30 miles about its mouth. It comprises an equally valuable body of lands. It is divided into two main branches, and these again into smaller ones. The region about its sources lacks the lakes and timber of the Upper Sioux, but has much rich prairie land. The lower part, comprised in Clay County, is mainly settled. Returns from various sources in this county place the wheat average at 14 bushels per acre, of plump, good berry. The next valley is that of the Dakota, which is longest, but not much known beyond 75 or 100 miles from its mouth. It has large bodies of the best lands, with slight supply of timber generally. This valley has not been much settled until within eighteen months past, and agriculture is but just commenced. Including all of Yankton County, I think the wheat crop will not surpass ten bushels per acre. The Missouri Valley, from the mouth of the Sioux to near Fort Thompson, is a broad and very fertile body of land, having heavier supplies of timber, and many advantages of markets. Union County, lying between the Big Sioux and Missouri Rivers, and including part of the valley of each, as well as the best of Brulé Creek Valley, is the oldest agricultural region of the Territory, and the most productive. Fine crops of wheat and oats have been harvested, and corn is fair, considering the long, dry season. All over that county the farmers show numerous stacks of grain, and the people are prosperous. This is true of the entire valley as far as Yankton, and above about Bon Homme, and in other places.

In the entire Territory the quality and quantity of cereals per acre increase each year under the same circumstances of season. The methods of farming improve rapidly. Knowledge is obtained by consultation from experience. It is also found that the same lands produce better every year for four or five years after the soil is broken. I have seen some remarkable proofs of this in the same field, where other circumstances were the same. I have given some instances of superior crops, and might enumerate others to the same effect. These are exceptions, but they are none the less conclusive evidence that such crops might be generally raised. Frequent scattered instances of extra crops prove that by good tillage such crops may be possible to nearly all, without great difficulty. One case of good crops from good tillage proves far more than one hundred instances of poor crops from the same kind of lands disproves, if the latter were by reason of poor tillage. Indifferent and poor farming may be able to bring poor results anywhere. We should therefore seek to discover the reasonable possibilities of a country under fair circumstances. The season has been unfavorable here the present summer, as elsewhere, but the test has all the more confirmed the belief that this Territory, in the general region described, is a magnificent agricultural district, and

with reasonable advantages will soon develop into a rich, populous, and prosperous State.

I have not mentioned specially the valley of the Red River of the North, but all information concerning it confirms the report that it is a valuable district, and will soon be settled by reason of the great railroad enterprise soon to reach it. Reports unite in proving the valley for twenty or thirty miles west of the river a very rich, level plain, well supplied with timber and water, and having fine agricultural advantages. The surveys now being directed there will afford a better means for estimating its advantages than heretofore attainable.

In my last annual report I gave a more extended account of climate and records of rain-fall. I have no reason to modify those statements, except to say that the present season has been very dry, as it has also in most of the world. Even under the influence of drought our soils have produced good crops. Where the lands had been tilled for several years the success was good. I have seen excellent crops of corn and wheat in every county and part where the lands had been long broken. The only reason why they seemed generally better in one part than another was the older settlement. These extra crops, in special cases, or in certain neighborhoods, are not due to difficult, unusual, and very expensive agriculture, which may not be economically attained by all. They were due to other causes, which time will give equally to all. We therefore confidently state this to be the agricultural Territory, and the best general body of farming lands remaining in the possession of the Government. For this and other reasons given in other reports and estimates we recommend its early survey.

Adam Smith, with vast learning, strives to show that the noblest wealth of a nation is in its material resources. By that rule we should not fear the test. But we also have a climate where vigorous health goes with labor, and mental activity is the general heritage. Our summers are fresh, bracing, and beautiful, and our winters not severe, and only marked by one or two storms of wind and snow of greater severity than in the winters of Central Illinois and Indiana. The winter of 1869-70 was of this kind, although accounted the most severe ever known in the Territory. Except a storm of one day's duration in January, and another of three days in March, the winter was not severe, but one against which people of any northern climate easily defend themselves, and through which all kinds of stock are easily cared for and sustained. The inhabitants of the Territory are generally from the northern tier of States, and are a vigorous, healthful, intelligent body of citizens, devoted to schools, churches, and all good, social, and civil institutions.

"Man is the nobler growth our realms supply,
And souls are ripened in our northern sky."

It is well known to the Department that there are in this Territory, between the rivers, large tracts of rolling prairie land without timber and distant from any supply; these regions comprise a very considerable part of the Territory, and in the southern and eastern portions of the Territory are good farming lands. They lie, however, in great stretches of undulating prairie, distant alike from a market for sale or purchase. So situated they must fill up more slowly than the favored valleys, and when settled must be devoted to stock-raising instead of the production of cereals more difficult to market. To one familiar with these rich plains they give a constant demand for railroads, the great equalizers of the earth's product markets. Two or three lines of railroad built would at once settle all these fertile lands, and pin them to the already great wealth-producing areas of the nation. There are two methods. One proposes the settlement of these lands and the development of routes of commerce afterward by private associated enterprise. This plan, if feasible, must be slow, and seems to people, as well as public men, not economical or best. The other plan proposes, by Government aid in lands to private corporations, the early completion of trunk lines across plain, river, and mountain, and following this the comfortable and rapid settlement of the whole domain. To any one in Dakota, the latter plan, under reasonable restraint and safeguards, seems eminently the proper one. The Government is here the great land proprietor. Individuals owning small areas and holding diverse opinions can act but poorly. Yet by taxes paid, by right of way granted, by charters given and corporations created, they do much. To develop or aid a given region, the citizens grant lands, stone, timber, and money, or labor to build the ordinary public highways. To such people it seems the owner of the right of eminent domain, the great land proprietor, may well give some part that all the balance may be developed, improved in price, and rendered productive of wealth. To such aid, for a railroad up the Missouri River, one across the Territory from Northern Iowa; one to the Missouri from Minnesota, and one up the valley of the Sioux to the North Pacific Road, or up the valley of the Dakota, the people of the Territory are intelligently devoted.

There is one other subject which it seems might be here mentioned. The Government has by law provided liberally for schools by the reservation of certain sections of land to that sole and exclusive use. These lands are for common schools, for the

thorough education of all the people in the primary branches. But no school system is complete that stops with that; nor can that be accomplished without other agencies and helps. There should and must be among the foundation ideas of a great school system, that of a great university, and a living union between it and the whole school system of the State. They must be parts of one system and joined by a living sympathy; the university to be but the capital to the column which has its base in popular education. To reach these great ends there should be a concentration of resources for advanced education as well as for primary schools. The United States, even amid the councils of war, took good council for the future in providing for a system of advanced education upon broad and liberal terms.

This munificent endowment has already produced wonderful vitality, and shows its greatest glory in the founding of Cornell University in New York, "where any person can find instruction in any study," in the words of its great patron.

While Michigan was yet a Territory, an insignificant grant of land, a few townships only, was made for a future university; with this means men have built the great university of Michigan—the pride of our whole western land.

We ask some such consideration for the people that are so soon to inhabit this region. If possible, a grant or provision should be made. If this request can be brought before the proper authorities, and the subject examined, we have no fear but we shall be provided for. It is a grand and worthy object, the motive is the common good and gain, and the reasons are all in favor of the provision.

Papers accompanying and forming a part of this report:

A.—Estimate for the surveying service in this district for the fiscal year ending June 30, 1872.

B.—Abstract account of the incidental expenses of the surveyor general's office for the fiscal year ending June 30, 1870.

C.—Statement showing the number of townships surveyed in Dakota and area of land therein.

D.—Map of Dakota representing the extent of public surveys.

Very respectfully, your obedient servant,

WM. H. H. BEADLE,
Surveyor General.

Hon. JOS. S. WILSON,

Commissioner General Land Office, Washington, D. C.

A.—*Estimate of appropriations required for continuing the public surveys in the Territory of Dakota, for salaries of the surveyor general and the clerks in his office, (as per act of March 2, 1861,) and for the incidental expenses of the office for the fiscal year ending June 30, 1872.*

For surveying standard parallels and guide meridians.....	\$8,000 00
For surveying township lines.....	17,000 00
For subdividing townships.....	35,000 00
Total for surveys.....	60,000 00

For salary of surveyor general, \$2,000.

For compensation of the clerks in the office of surveyor general, \$6,300.

For rent of office for the surveyor general, fuel, books, stationery, and other incidental expenses, \$2,000.

WM. H. H. BEADLE,
Surveyor General.

SURVEYOR GENERAL'S OFFICE,

Yancton, Dakota Territory, August 27, 1870.

B.—*Abstract statement of the incidental expenses of the surveyor general's office for the fiscal year ending June 30, 1870.*

For the quarter ending September 30, 1869.....	\$453 96
For the quarter ending December 31, 1869.....	894 52
For the quarter ending March 31, 1870.....	257 25
For the quarter ending June 30, 1870.....	331 65
	1,937 38

WM. H. H. BEADLE,
Surveyor General.

SURVEYOR GENERAL'S OFFICE,

Yancton, Dakota Territory, August 27, 1870.

C.—List of townships surveyed in the Territory of Dakota from July 1, 1869, to June 30, 1870.

No.	Township.	Range.	Area.	No.	Township.	Range.	Area.
1	105 N	47 W	14, 086.22	21	101 N	57 W	23, 001.88
2	106 N	47 W	14, 076.55	22	101 N	58 W	23, 062.59
3	107 N	47 W	14, 110.44	23	102 N	58 W	23, 999.63
4	108 N	47 W	14, 071.61	24	101 N	59 W	23, 005.34
5	105 N	48 W	23, 172.29	25	102 N	59 W	23, 043.53
6	106 N	48 W	23, 103.26	26	95 N	61 W	23, 342.13
7	107 N	48 W	23, 027.14	27	96 N	61 W	20, 559.50
8	108 N	48 W	22, 672.24	28	97 N	61 W	21, 183.07
9	105 N	49 W	23, 028.41	29	95 N	62 W	126.56
10	106 N	49 W	23, 027.22	30	96 N	62 W	49
11	105 N	50 W	23, 014.80	31	97 N	62 W	10, 368.23
12	106 N	50 W	22, 842.02	32	97 N	63 W	1, 521.33
13	105 N	51 W	21, 822.89	33	98 N	63 W	22, 113.47
14	106 N	51 W	20, 958.49	34	98 N	64 W	13, 905.42
15	105 N	52 W	22, 398.30	35	98 N	65 W	4, 274.44
16	106 N	52 W	21, 206.86	36	98 N	66 W	5, 146.42
17	101 N	53 W	22, 969.84	*91 N	51 W		611.03
18	101 N	54 W	23, 061.84				
19	101 N	55 W	22, 979.14				655, 878.47
20	101 N	56 W	22, 978.94	248 previously reported			4, 384, 522.17
Total acres surveyed							5, 040, 400.64

* Island in Missouri River.

WM. H. H. BEADLE, *Surveyor General.*

SURVEYOR GENERAL'S OFFICE,
Yancton, Dakota Territory, August 27, 1870.

No. 17 E.—Report of the surveyor general of Kansas.

SURVEYOR GENERAL'S OFFICE,
Lawrence, Kansas, September 25, 1870.

SIR: In accordance with your circular of May 2, 1870, I herewith submit, in duplicate, my annual report of the surveying operations, together with a map showing the progress of surveys in this district during the fiscal year ending June 30, 1870.

FIELD WORK.

All surveys contracted for out of the appropriation of March 3, 1869, are completed. Messrs. Diendorf and Cosgray, deputy surveyors, being unable to execute the standard lines in the proximity of the western boundary of Kansas without military protection, in compliance with your letter of the 8th of October, 1869, had canceled so much of their contract No. 341. In lieu thereof the deputies entered into contract No. 346 for an amount equal to that relinquished.

Out of special deposits there have been surveyed an island in the Missouri River, opposite the city of Atchison, and the 20-acre tract of the Fort Riley reservation, and fractional section one on the west side of said reservation, near Junction City, granted to the Kansas Pacific Railway Company.

Three joint contracts have been entered into out of the appropriation of July 15, 1870, for the extension of the lines of public surveys in this district. In letting these contracts I have been guided by your instructions of August 7, 1868, and July 30, 1870. Surveys are extended along the line of the Kansas Pacific Railway, and along the Arkansas River between the sixth principal meridian and the second guide meridian west, where actual settlements require it.

For the better protection of the surveyors from hostile bands of Indians, the deputies entered into joint contracts. This plan was adopted last year, and gave protection to those parties that were then attacked. The parties are now all in the field prosecuting their surveys, and will complete the same on or before the first day of January next.

OFFICE WORK.

During the fiscal year ending June 30, 1870, the field-notes of 348 miles of standard, 95 townships of exterior, and 195 townships of subdivisional lines have been transcribed and transmitted to the Department.

Thirteen diagrams, in duplicate, of standard and exterior lines, and plats, in tripli-

cate, of 195 townships, were prepared, and the required copies transmitted to the Department and the proper local land offices.

Diagrams and plats of the special survey of Atchison Island and the tracts of land granted to the Kansas Pacific Railway of the Fort Riley reservation were made, and the field-notes of the same copied and transmitted to the Department and local land office.

One hundred and ninety-five descriptive lists have been prepared and forwarded to the respective local land offices.

The usual amount of miscellaneous business has been attended to—of which this office cannot conveniently give any detailed statement.

EXTENSION OF PUBLIC SURVEYS.

In accordance with your letter of May 2, 1870, I prepared the usual estimates for the surveying service in my district for the fiscal year ending June 30, 1872, which were transmitted July 25, 1870. The extension of surveys over the unsurveyed public domain is chiefly based upon the public interest, and I have, therefore, proposed localities where it is most required.

There is yet remaining a strip of land about 12 miles wide, lying between the fifth standard parallel and the west boundary of the State, and within the grant of the Kansas Pacific Railway. It is very important that the boundary line between Kansas and Colorado should be established, in order to close out these surveys.

I did not propose the survey of boundary lines in my estimates for surveys, but it is very necessary, and I also recommend that the south boundary of the State be surveyed. This line was determined and surveyed under the direction of Lieutenant Colonel J. E. Johnson, United States Army, in 1857. It has been ascertained that no landmarks were erected to perpetuate this line. A series of astronomical observations were taken at different stations, and generally at points from the line. Without the proper survey of this boundary line, it is impracticable to close the lines of the public surveys of this district thereon.

That portion of country in the western part of the State which at present attracts the most attention from the pioneer settler is along the Solomon and Arkansas Rivers and their tributaries. The streams contain good water, and their banks are skirted with narrow belts of timber. A fair proportion of good bottom land is found along these rivers and their tributaries. These lands are in demand, and the public interest should necessarily be considered in the extension of the lines of public surveys.

In conclusion, I respectfully invite your attention to the accompanying tabular statements, which form a part of this report:

A.—Names, duties, and salaries of persons employed in the surveyor general's office during the year ending June 30, 1870.

B.—Sums expended for salaries of surveyor general and clerks during the year ending June 30, 1870.

C.—Expenditures of the office during the fiscal year ending June 30, 1870.

D.—Amounts deposited by individuals for the survey of public lands during the fiscal year ending June 30, 1870.

E.—The extent and cost of surveys executed during the year ending June 30, 1870.

F.—Numbers and area of townships, plats and transcripts of field-notes of which have been transmitted to the Department, and plats and descriptive lists furnished the local land offices at Junction City, Humboldt, and Topeka during the fiscal year ending June 30, 1870.

G.—Estimated expense, number of miles, and character of work for which contracts have been entered into, and chargeable to the appropriation of July 15, 1870.

H.—Estimate of sums required for the extension of surveys during the fiscal year ending June 30, 1872.

I.—Estimate of sums required for office expenses for the fiscal year ending June 30, 1872.

I am, sir, very respectfully, your obedient servant,

C. W. BABCOCK,
Surveyor General.

Hon. JOSEPH S. WILSON,
Commissioner General Land Office.

SURVEYOR GENERAL'S OFFICE,
Lawrence, Kansas, September 21, 1870

SIR: In compliance with your letter of March 30, 1870, I herewith submit my special report upon the agricultural, mineral, manufacturing, and commercial capacity of Kansas.

Many statistics I have failed to obtain, and, in the absence of the same, I can only furnish general information upon different subjects.

AGRICULTURAL.

Kansas may well be divided into two parts, each of which possesses advantages peculiar to itself. The eastern half is especially adapted to farming, and the western to grazing. Its geographical position is between 37° and 40° of north latitude, and 94° 38' and 102° of longitude west of Greenwich; yet there is not a sufficient difference in the climate and soil of the eastern part to give one section a material advantage over the other as regards the agricultural capabilities; to each of the principal crops the entire eastern portion from north to south is well suited. It needs but enterprise and the application of the principles of the art and science of farming to cause the soil to bring forth bountiful harvests.

As an agricultural State, Kansas ranks among the first. The average yield of all the staple crops, in accordance with the report of the Department of Agriculture, exceeds nearly every other State. The following collated statistics show the average of the principal crops in Kansas per acre:

The aggregate product of winter and spring wheat is 19 bushels per acre; of winter wheat alone, 15 bushels per acre. Rye, (spring variety,) 26 bushels per acre; winter rye, 13 bushels per acre. The entire product of winter and spring barley, 31 bushels per acre; winter barley, 11 bushels per acre. Oats yielded 42 bushels per acre. Corn shows a yield of 48 bushels per acre. Buckwheat, 19 bushels per acre. Irish potatoes, 149 bushels per acre; and sweet potatoes, 110 bushels. Hay (it being prairie grass) is nearly 2 tons per acre.

In comparing these statistics with those of other States, it will appear that Kansas asserts her supremacy, and stands at the head of most of the States.

To the production of the staple commodities, that of fruit may also be added. Both climate and soil are well suited to this branch of agriculture. Throughout most of the settled portion of the State more or less attention has been paid to this subject, and it has finally become a very important branch of industry. The fruit culture of Kansas began with the early settlement of the State, and the marked success which has attended the efforts of the pioneer and experimenter in this direction has served as a stimulant to the more recent comer.

The total value of orchard products of the entire State amounts to \$159,850, and that of garden produce to \$144,090.

The estimated value of all farm production, including betterments and additions to stock, is \$24,100,000.

The following table shows the total number of acres under improvement in the entire State, and the acreage in each kind of crop:

Land improved.	Indian corn.	Wheat.		Rye.	Oats.	Barley.	Buckwheat.	Peas and beans.	Potatoes.		Hay.	Tobacco.
		Spring.	Winter.						Irish.	Sweet.		
<i>Acres.</i> 2,000,440	<i>Acres.</i> 312,290	<i>Acres.</i> 46,764	<i>Acres.</i> 71,005	<i>Acres.</i> 3,213	<i>Acres.</i> 91,430	<i>Acres.</i> 2,667	<i>Acres.</i> 1,393	<i>Acres.</i> 537	<i>Acres.</i> 14,800	<i>Acres.</i> 4,840	<i>Acres.</i> 220,500	<i>Acres.</i> 30

Table showing the total production of each kind of crop of the entire State:

Indian corn.	Wheat.		Rye.	Oats.	Barley.	Buckwheat.	Peas and beans.	Potatoes.		Hay.	Tobacco.
	Spring.	Winter.						Irish.	Sweet.		
<i>Bushels.</i> 14,389,930	<i>Bushels.</i> 1,064,070	<i>Bushels.</i> 1,065,075	<i>Bushels.</i> 64,260	<i>Bushels.</i> 3,840,060	<i>Bush.</i> 84,010	<i>Bush.</i> 26,470	<i>Bush.</i> 16,115	<i>Bushels.</i> 2,105,240	<i>Bush.</i> 53,240	<i>Tons.</i> 441,000	<i>Lbs.</i> 30,600

As much attention is paid to stock-raising, the climate and soil being so admirably adapted to that branch of farming, I give below a table showing the live-stock of the State and its total value :

Horses.	Mules and asses.	Milch cows.	Working oxen.	Other cattle.	Sheep.	Swine.	Total value of all live stock.
120, 172	12, 470	123, 510	22, 010	235, 412	162, 585	196, 115	\$22, 945, 445

WOOL-GROWING.

The climate and soil of no State are better adapted for sheep-husbandry than Kansas, and farmers already begin to pay a marked attention to this branch of business. The entire western portion of our State is well adapted to the production of wool, and, in my opinion, it will be settled by persons devoting themselves to stock-raising and sheep-breeding. During the last year the production of wool of the entire State amounted to 304,000 pounds.

Much of this wool is exported to eastern markets, while some is used by home manufactories.

COTTON.

The culture of this article has been tried in the southern part of the State ever since the first settlements, but to a very limited extent. Experiments, however, show that the climate and soil of Southern Kansas are adapted to cotton-planting; and when entered into by persons acquainted with the conditions of success, enormous profits may be realized. The amount of cotton raised during the last year is 7,725 pounds.

FLAX AND HEMP.

These fibrous plants grow well in the eastern half of the State. But very little attention is now paid to the same. The following is the production of last year's crop: 70 tons of hemp; flax, none.

TEA CULTURE.

The capacity of the State for the cultivation of the tea plant has not as yet been tested, and we can only speculate as to the result of any experiments in that direction.

It may be observed, however, that, although the larger part of the tea districts of China is in latitudes south of the south boundary of the State, certain varieties are grown in latitudes north of the north boundary, where the climate, though generally mild, is yet sufficiently severe to permit snows to occasionally cover the earth.

So far it has failed to attract the attention of the producing class, mainly because of the prevailing idea of the impracticability of the tea culture in this latitude, and because facilities for testing its practicability or impracticability have not been available.

SILK CULTURE.

While this climate is well adapted to the growth of the silk-worm, and the mulberry grows wild throughout the State, yet very little has been done so far in the culture of the valuable article of silk.

The only place in the State where experiments have been made is in Franklin County, by a French colony, and it affords me pleasure to say that it is a success.

I herewith submit the following letter from William H. Schofield, esq., in relation to the silk culture of that colony :

"WILLIAMSBURG, FRANKLIN COUNTY, KANSAS, *August 2, 1870.*

"DEAR SIR: I have the honor to acknowledge the receipt of your favor of July 27, soliciting information touching the cultivation of the silk-worm and manufacture of silk fabrics in this State.

"I have no practical knowledge of either myself, and can only furnish a few brief facts concerning the French colony, so called, located in this vicinity, and the initiatory steps taken by them toward the production of silk and its manufacture.

"M. Valetton de Boissiere, having visited the United States several times with a view of locating a colony of French silk-workers, in January of 1869 purchased of me 3,200 acres of land, and at once commenced improvements thereon. He brought on several families of French people—artisans and experts in the manufacture of silk fabrics. They put a large tract of their land into cultivation for farm purposes, and to prepare it for large groves of the mulberry tree, and some other varieties suitable for the silk-worm to feed upon. Several varieties of these trees have already been set out, and preparation is now being made to set out several thousand next spring.

"M. Boissiere is a gentleman of fine education and of ample means, and he is devoting his whole time to the development of this project. He has associated with him some of the best practical silk manufacturers of France.

"They have erected one large house of three stories, and have in operation one large loom for weaving silk-velvet ribbons. This machine weaves 28 double pieces, which, when cut, make 56 pieces of velvet ribbon of the very finest texture.

"So far, this one branch of their business is an entire success. The raw material for these velvets has been imported—cotton from England and silk in the cocoon and in the form of raw silk from China and from California.

"M. Boissiere is now erecting a large stone building, which is to be a factory, and is now importing from France machinery for the manufacture of taffeta, velvet vestings, silk thread, spool silk, &c. Several French families are expected here soon, who will operate the machinery.

"M. Boissiere and the gentlemen associated with him have had large experience in the cultivation of the silk-worm and in manufacturing fine silk goods, and, after looking over our country from north to south, have from choice selected Kansas, and Franklin County, as best adapted to their purposes. They are sanguine of entire success. They like the soil, the water, and the climate. They have the skill and have the means to carry this new and most important enterprise to a successful consummation.

"I doubt not in a few years we shall see here large mulberry groves, from which will be fed millions of the silk-worm, and from which will be produced a large variety of silk goods, which are now manufactured at only one or two places in the world.

"Regretting my inability to give you more practical information, I remain your friend, very respectfully,

"WM. H. SCHOFIELD.

"Hon. C. W. BAECKOCK,
"Surveyor General of Kansas."

"A NEW INDUSTRY—THE VELVET MANUFACTORY AT FRANKLIN, KANSAS.

"The Mississippi Valley Review informs us that the first velvet manufactory in the United States has just been started by a colony from France, situated at Franklin, Kansas, sixteen miles southwest from Ottawa. The colony commenced operations last summer, upon the coöperative community plan, under the superintendence of Valetton de Boissiere, and have already, besides their velvet manufactory, comfortable dwellings, several farms under operation, with a coöperative store, shop, &c. M. Boissiere brought to St. Louis, last month, a box of samples of beautiful silk velvet, equal to the best French imported article. They are of various shades of color, and in width from No. 9 to No. 14, inclusive, very neatly packed in pieces, with handsome gilt bands and labels, marked 'Extra French velvet, American, manufactured in Kansas, 11 yards.'

"Boissiere states that he has now one loom in operation with which one person makes about 280 yards a day, carrying through the loom 56 pieces at a time, of various widths, each piece about five yards in length. He contemplates adding other looms, not only to increase the manufacture of ribbons, but also to add machinery for manufacturing sewing silk, tassels, trimmings, &c. Thus far he has used raw materials which he procured from France, but he contemplates securing his supplies of silks from Japan until it can be furnished from our native industry. This is another evidence which, in connection with our newly-started manufactories of sewing and other silks at Paterson, New Jersey, and other eastern points, shows that the silk manufacture can easily be widely introduced in this country. For where one silk manufactory will pay, a thousand will pay still better. Now it will not be long before the silk culture as well will be demonstrated by success in California, Utah, and upon the plains of Kansas. At Salt Lake there is a coöponery with 800,000 worms, consuming thirty bushels of mulberry leaves a day. No difficulty is found in feeding or multiplying them. We now import about \$25,000,000 worth of silk manufactures a year, and the introduction of Chinese and French labor to an extent sufficient to grow the silk and manufacture it here will add to our yearly production an amount equal to one-fifth the interest on the national debt. The silk manufacture was introduced into France by the great protectionist statesman, Colbert, at considerable trouble and expense at first, but how immeasurably has the ultimate profit to the country exceeded the cost of the experiment. We hope to see it firmly introduced during our present epoch of protection, with equally beneficent results."

MINERALS.

The discovery of coal at Leavenworth is the only late development of importance that I have to communicate to you under this head.

The Leavenworth Coal Company, at a depth of 700 feet reached a 30-inch vein of

bituminous coal of superior quality. The section sustains the geological reports of Missouri and Kansas, that the rocks of Leavenworth belong to the middle coal measures, or that portion of the series which overlies the thickest coal beds, instead of below all the coal, as reported by United States geologists, who have placed the rocks in the lower carboniferous strata.

The company is now actively engaged in its mining operations, and 900 bushels of coal per day are produced, which quantity finds a ready market at the rate of 17 cents per bushel.

Within two months the company expect to raise 2,000 bushels daily, this amount being steadily increased as the work progresses.

In other parts of the State (particularly in the southern counties) the miner's pick is bringing great quantities of excellent bituminous coal to the light of day.

MANUFACTURING.

The State possesses abundant facilities for manufacturing—first, in the numerous water-powers found on most of the prominent streams and their tributaries, and, secondly, in the vast coal beds which underlie a large portion of the State, thereby affording an abundance of cheap fuel.

In the northern portion the Big and Little Blue Rivers, the Grasshopper, Republican, and Solomon Fork, all tributaries of the Kansas River, and in the southern part the Osage, Neosho, Spring River, Fall River, Verdigris, Cana, Cottonwood, and Whitewater are the principal streams, affording good water-powers, many of which have been, to a limited extent, improved.

The great advantage of steam as a motive power is apparent when we consider the unlimited supply of most excellent coal which has been developed and is now being mined in different parts of the State, overcoming, thereby, to a very large extent, the objections against this agency in manufacturing. Not being confined to any particular place or peculiar situation, it can be made to subserve the interests of the manufacturing class in those places where the raw material can be the most readily and at the least expense be collected.

The railroad system of the State, though in its infancy, has so far progressed as to afford ample means of communication with the most important markets in this country, which is another important feature, aside from the actual capabilities of the State.

There are in number about 675 factories already in operation, which pay taxes to the General Government as such, but this number does not include many small establishments not brought within the limits of the revenue statistics.

There are in the State at least six woolen mills. One of these is at Burlington, one at Fort Scott, one at Leavenworth, one at Wathena, and two at Lawrence. Of the two in this city, one runs 200 spindles and the other 280, and the amount of wool carded, spun, woven into cloths and flannels, and otherwise prepared for market, is equivalent to about 100 pounds daily to each mill, or about 31,000 pounds per annum. It is said that the single mill at Fort Scott has equal capacity with these two, and allowing for each of the others mentioned capabilities equal to either of the mills at Lawrence, (which is probable,) we should then have as the total result, the ability to turn out from the mills now in successful operation, 217,000 pounds of manufactured wool as a yearly transaction.

Almost every branch of industry is represented in the State, and factories producing spokes and hubs, chairs, wagons, agricultural implements, matches, soap, &c., together with flouring mills, machine shops, and iron foundries, are springing up in different parts of the State.

In this connection the Great Western Manufacturing Company, of Leavenworth, needs special mention. This company is engaged in producing machinery of all kinds, and largely in manufacturing stoves. The business was begun in the year 1857, and has gradually increased in importance, multiplying its facilities, until it has become the most extensive establishment west of St. Louis, and hardly equaled there.

The engines and machine work turned out by this establishment are pronounced of a superior quality, wherever introduced, as evidenced by the 100 steam-engines now in operation in the West, the completeness and perfection of which are unsurpassed by any manufactory in the country. It is but recently, however, that they have entered into stove manufacturing, of which they make about fifteen different varieties. Last year they turned out 7,000 stoves. This year they expect to increase the number to 10,000. In their ordinary business they melt down from 15 to 18 tons of iron daily for casting purposes, give employment to about 150 hands, and transact a business equivalent to \$375,000 per annum, of which about \$175,000 legitimately belongs to the stove department.

The following statement in regard to the manufactories and business of Leavenworth the chief city of the State, I transcribe from the Kansas Farmer :

Manufacturing has been retarded by the high price of fuel, yet the necessities of the country and peculiar advantages of the locality have built up an extensive manufac-

turing business, which yields a large return upon the capital invested. The records of the revenue department show 106 manufactories in the city who make returns and pay a revenue tax as such. The aggregate product of these manufactories for the year 1869 exceeded \$2,000,000.

Manufacturing must depend, in any State or country, very largely for success upon the production of the raw material. It is, therefore, to the wool-growers, and the cotton, hemp, and flax producers, that Kansas looks for the material to supply her mills. All these can be produced in rich abundance, as well as the material for the manufacture of silk fabrics, inasmuch as the silk-worm lives and thrives in this section, and the mulberry is indigenous to this climate.

COMMERCIAL FACILITIES.

The natural means of transportation is exceedingly limited, being confined entirely to the Missouri River, which flows along the northeastern portion of the State for about 100 miles.

This brings water communication to the borders of Kansas, gives free intercourse with the sea through the channels of the Missouri and Mississippi Rivers to the Gulf of Mexico, and enables the State to take advantage of whatever benefit this connection may afford.

But marvelous things have been accomplished in the building of railroads. Six years ago there was not one mile of railroad in the State; now there are over 1,200 miles in active operation.

It is probable, in the absence of any facts bearing upon this subject, that the commerce is chiefly of a domestic character, in so far as the actual production of the State is concerned.

The rapidly augmenting population demands for consumption almost, if not quite, the entire product of the country. It is true that some portion of the crops are exported, but it is also true that an equal amount, if not a greater, is imported to supply the deficiency occasioned by exportation.

A company in Leavenworth is organizing for the shipment of grain in bulk on the Missouri and Mississippi Rivers. Successful experiments in this line were first made in Iowa and Minnesota. Shipment of grain in barges is now carried on by dealers in those States on the Mississippi River. The same enterprise is soon to develop itself in Kansas, and the products of our rich fields will find their way, by means of natural communication, to the mouth of the Mississippi River, and thence to Europe.

The total trade of Kansas, as taken from the United States census returns, is \$114,000,000 in round numbers, \$30,000,000 of which is transacted in the city of Leavenworth alone, a fact which conclusively points to that city as the great commercial center of the State. Referring to the records of the revenue office, we find 60 wholesale dealers, merchants whose sales exceed \$25,000 a year. Of these a large number pay taxes on sales in excess of \$50,000, some of them reaching a sale of three-quarters of a million dollars in the year 1869. The same records show the number of retail dealers, or those whose sales exceed \$1,000, and do not reach \$25,000 a year, to be 453. The aggregate sales of wholesale dealers will not fall short of \$20,000,000, while those of retail dealers will considerably exceed \$10,000,000. Thirty millions per annum is certainly large for the sales of merchandise in a city not fifteen years old.

There are six other important commercial places now in Kansas where great business activity exists. These are Lawrence, Atchison, Fort Scott, Topeka, Junction City, and Emporia, enumerated here in the order of their importance. Of these cities, Lawrence occupies an exceedingly favorable situation, and no interior city in the State, at present, possesses so many commercial advantages as this place, and the influence of no other is so widely diffused.

The banking business has been, and is now, very profitable. It is carried on to a considerable extent throughout the State. The amount of banking capital employed in Kansas is estimated at \$26,790,600.

The principal agents employed in transacting the business of Kansas are briefly enumerated as follows, viz: Bankers, 58; wholesale dealers, 223; retail dealers, 2,063; manufacturers, 675; peddlers, 310; cattle-brokers, 129; produce-brokers, 126; apothecaries, 159.

THE KANSAS-TEXAS CATTLE TRADE.

This traffic has assumed a very important position in the business of the State. Large herds of cattle are annually brought to points on the Kansas Pacific Railway by drovers from Texas. The trade mainly concentrates at Abilene, yet Junction City, Salina, and Ellsworth, and some other points in Southern Kansas, do a great share of this business.

Last year some 50,000 head of cattle were shipped east from Abilene, and about 20,000 head more were sent forward from other points in the State. The shipments during the present year will largely exceed those of 1869. The total number of cattle

of all kinds, both sold and remaining on hand, at Abilene, this year, is about 150,000, and it may safely be estimated that as many more are at other points in the State ready for market.

The cattle are generally bought in Texas by the herd, at the following prices per head: Beef cattle, \$11; milch cows, \$6; three-year-olds, \$7; two-year-olds, \$4; one-year-old, \$2 50. Such a mixed drove, when arriving at Abilene, is held at figures adding 100 per cent., and when grazed through the summer 20 per cent. more. Beef cattle, ready for market, are valued at \$25.

It is worthy of remark that the greater part of the immense business of Kansas has sprung up within the last decade, and that the population has increased from 107,204 in 1860, to upward of 360,000 in 1870. The causes for this marvelous growth must be looked for, to some extent, outside of the ordinary laws of immigration, and will be found to exist, very largely, in the advantages growing out of situation, climate, natural resources, commercial facilities, &c., the details of which it is impossible, in this paper, to fully explain.

I am, sir, very respectfully, your obedient servant,

C. W. BABCOCK,
Surveyor General.

Hon. JOSEPH S. WILSON,
Commissioner General Land Office, Washington, D. C.

A.—Statement showing the names, duties, nativity, whence appointed, and rate of compensation per annum, of persons employed in the surveyor general's office of Kansas, during the fiscal year ending June 30, 1870.

Name.	Duty.	Nativity.	Whence appointed.	Term of service.	Salary per annum.
C. W. Babcock.....	Surveyor general...	Vermont.....	Kansas...	Entire year.....	\$2,000 00
H. C. F. Hackbusch..	Chief clerk.....	Prussia.....	do.....	do.....	1,600 00
William B. Covel...	Principal draughtsman.	New York.....	do.....	do.....	1,300 00
Francis L. Hildebrand.	Assistant draughtsman.	Prussia.....	do.....	June 14, 1870, to June 30, 1870.	1,100 00
Ralph Romaine.....	Copyist.....	Canada.....	do.....	July 1, 1869, to Oct. 26, 1869.	1,100 00
Austin R. Mills.....	Copyist.....	Massachusetts	do.....	Entire year.....	1,100 00
James Bicknell.....	Messenger.....	England.....	do.....	do.....	600 00

B.—Statement showing the amount expended for salaries of surveyor general and clerks during the fiscal year ending June 30, 1870.

Quarter ending September 30, 1869.....	\$1,775 00
Quarter ending December 31, 1869.....	1,577 72
Quarter ending March 31, 1870.....	1,500 00
Quarter ending June 30, 1870.....	1,542 31
Total.....	6,395 03

C.—Statement showing the amount expended for rent of office and incidental expenses during the fiscal year ending June 30, 1870.

Quarter ending September 30, 1869.....	\$736 95
Quarter ending December 31, 1869.....	690 15
Quarter ending March 31, 1870.....	541 35
Quarter ending June 30, 1870.....	322 00
Total.....	2,290 45

RECAPITULATION.

Salaries of surveyor general and clerks during the year.....	\$6,395 03
Rent of office and incidental expenses during the year.....	2,290 45
Total.....	8,685 48

D.—Statement showing the amounts deposited by individuals for the survey of public lands during the fiscal year ending June 30, 1870.

Date of deposit.	By whom deposited.	Amount deposited.		
		For cost of survey.	For compensation of clerks	Total.
1869.				
September 28 }	P. L. Hubbard.....	\$50 00	\$50 00	\$100 00
October 11 ... }				
February 9	John P. Devereux	35 00	25 00	60 00
	Total	85 00	75 00	160 00

E.—Statement showing extent and cost of surveys executed in Kansas during the fiscal year ending June 30, 1870, payable out of appropriation for public surveys.

No. of contract.	Name of deputy.	Style of survey.	Standard lines.	Township lines.	Section lines.	Date of appropriation.	Date of contract.	Rate per mile.	Amount for mileage.	Total of contract.
341	Diefendorf and Cosgray	Township lines.	Miles.	Miles chs. lks.	Miles chs. lks.	March 3, 1869	July 12, 1869	\$5 00	\$1,439 20	\$5,635 53
341	Diefendorf and Cosgray	Section lines.	.....	229 69 41	839 21 27	March 3, 1869	July 12, 1869	5 00	4,196 33	12,005 84
342	Armstrong, McClure, and Armstrong	Section lines.	.....	.....	2,401 13 41	March 3, 1869	July 12, 1869	5 00	.....	2,411 37
342	Armstrong, McClure, and Armstrong	Township lines.	.....	401 71 66	840 13 66	March 3, 1869	July 12, 1869	6 00	.....	4,300 85
343	Mitchell and Mitchell	Section lines.	.....	.....	1,981 63 85	March 3, 1869	Aug. 11, 1869	5 00	.....	9,908 99
344	Wilcox and Mooney	Section lines.	.....	.....	300 33 63	March 3, 1869	Nov. 5, 1869	5 00	1,802 10	.....
345	Diefendorf and Cosgray	Section lines.	.....	.....	.....	March 3, 1869	Nov. 5, 1869	10 00	360 00	.....
346	Diefendorf and Cosgray	Standard lines.	36	.....	.....	March 3, 1869	Nov. 5, 1869	.....	974 54	.....
346	Diefendorf and Cosgray	Township lines.	.....	162 33 88	.....	March 3, 1869	Nov. 5, 1869	6 00	.....	3,136 64
347	Armstrong and McClure	Section lines.	.....	480 56 59	.....	March 3, 1869	Nov. 10, 1869	5 00	.....	2,403 53
348	Robert Armstrong	Section lines.	.....	60 03 11	.....	March 3, 1869	Feb. 17, 1870	5 00	.....	300 19
	Total	.....	.....	.....	.....	.....	.....	.....	.....	40,002 94

Statement showing the extent and cost of surveys executed in Kansas during the fiscal year ending June 30, 1870, payable out of special deposits by individuals.

No. of contract.	Name of deputy.	Style of survey.	Date of deposit.	Date of contract.	Rate per mile.	Amount for mileage.	Total of contract.
345	James Ingels	Section and meander lines.	{ Sept. 28, 1869 } { Oct. 11, 1869 }	Oct. 12, 1869	Special	.....	\$50 00
349	Robert Armstrong	Railroad grant.	Feb. 9, 1870	Feb. 17, 1870	Special	.....	35 00
	Total	.....	.....	.....	.....	.....	\$85 00

F.—Statement showing the description of lands and area of same, for which duplicate plats and transcripts of field-notes have been transmitted to the Department, and triplicate plats and descriptive lists have been furnished the local land office at Junction City, during the fiscal year ending June 30, 1870.

Township and range.	Area.	Plats and field-notes— when transmitted.	Descriptive lists— when transmitted.
	<i>Acres.</i>		
Township 6 south, range 15 west.....	22,931.42	July 23, 1869.....	September 13, 1869.
Township 7 south, range 15 west.....	22,969.98	July 23, 1869.....	September 13, 1869.
Township 8 south, range 15 west.....	22,977.56	July 23, 1869.....	September 13, 1869.
Township 6 south, range 16 west.....	23,031.24	July 23, 1869.....	September 13, 1869.
Township 7 south, range 16 west.....	22,835.64	July 23, 1869.....	September 13, 1869.
Township 8 south, range 16 west.....	22,860.93	July 23, 1869.....	September 13, 1869.
Township 6 south, range 17 west.....	22,877.90	July 23, 1869.....	September 13, 1869.
Township 7 south, range 17 west.....	23,024.56	July 23, 1869.....	September 13, 1869.
Township 8 south, range 17 west.....	23,057.46	July 23, 1869.....	September 13, 1869.
Township 9 south, range 17 west.....	23,017.46	July 23, 1869.....	September 13, 1869.
Township 10 south, range 17 west.....	23,041.04	July 23, 1869.....	September 13, 1869.
Township 6 south, range 18 west.....	22,789.94	July 23, 1869.....	September 13, 1869.
Township 7 south, range 18 west.....	22,943.75	July 23, 1869.....	September 13, 1869.
Township 8 south, range 18 west.....	23,030.14	July 23, 1869.....	September 13, 1869.
Township 9 south, range 18 west.....	22,987.51	July 23, 1869.....	September 13, 1869.
Township 10 south, range 18 west.....	23,068.23	July 23, 1869.....	September 13, 1869.
Township 6 south, range 19 west.....	22,982.79	July 23, 1869.....	September 13, 1869.
Township 7 south, range 19 west.....	22,978.55	July 23, 1869.....	September 13, 1869.
Township 8 south, range 19 west.....	23,048.31	July 23, 1869.....	September 13, 1869.
Township 9 south, range 19 west.....	23,058.45	July 23, 1869.....	September 13, 1869.
Township 10 south, range 19 west.....	23,002.42	August 31, 1869.....	September 13, 1869.
Township 6 south, range 20 west.....	22,786.40	August 31, 1869.....	September 13, 1869.
Township 7 south, range 20 west.....	22,864.21	August 31, 1869.....	September 13, 1869.
Township 8 south, range 20 west.....	22,869.66	August 31, 1869.....	September 13, 1869.
Township 9 south, range 20 west.....	22,973.75	August 31, 1869.....	September 13, 1869.
Township 10 south, range 20 west.....	23,024.46	August 31, 1869.....	September 13, 1869.
Township 11 south, range 20 west.....	23,143.90	August 31, 1869.....	September 13, 1869.
Township 12 south, range 20 west.....	22,873.77	August 31, 1869.....	September 13, 1869.
Township 6 south, range 21 west.....	22,817.79	August 31, 1869.....	September 13, 1869.
Township 7 south, range 21 west.....	22,963.81	August 31, 1869.....	September 13, 1869.
Township 8 south, range 21 west.....	23,031.52	August 31, 1869.....	September 13, 1869.
Township 9 south, range 21 west.....	22,920.89	August 31, 1869.....	September 13, 1869.
Township 10 south, range 21 west.....	22,983.83	August 31, 1869.....	September 13, 1869.
Township 11 south, range 21 west.....	23,008.90	August 31, 1869.....	September 13, 1869.
Township 12 south, range 21 west.....	22,958.43	August 31, 1869.....	September 13, 1869.
Township 6 south, range 22 west.....	22,752.92	August 31, 1869.....	September 13, 1869.
Township 7 south, range 22 west.....	23,022.61	August 31, 1869.....	September 13, 1869.
Township 8 south, range 22 west.....	23,043.42	August 31, 1869.....	September 13, 1869.
Township 9 south, range 22 west.....	23,021.36	August 31, 1869.....	September 13, 1869.
Township 10 south, range 22 west.....	22,970.11	August 31, 1869.....	September 13, 1869.
Township 16 south, range 13 west.....	22,987.25	September 30, 1869.....	November 30, 1869.
Township 17 south, range 13 west.....	22,923.88	September 30, 1869.....	November 30, 1869.
Township 16 south, range 14 west.....	23,002.87	September 30, 1869.....	November 30, 1869.
Township 17 south, range 14 west.....	22,966.69	September 30, 1869.....	November 30, 1869.
Township 18 south, range 14 west.....	22,968.24	September 30, 1869.....	November 30, 1869.
Township 19 south, range 14 west.....	22,998.87	September 30, 1869.....	November 30, 1869.
Township 20 south, range 14 west.....	10,869.78	September 30, 1869.....	November 30, 1869.
Township 16 south, range 15 west.....	22,992.81	September 30, 1869.....	November 30, 1869.
Township 17 south, range 15 west.....	22,905.84	September 30, 1869.....	November 30, 1869.
Township 18 south, range 15 west.....	22,900.32	September 30, 1869.....	November 30, 1869.
Township 19 south, range 15 west.....	22,990.34	September 30, 1869.....	November 30, 1869.
Township 20 south, range 15 west.....	22,932.38	September 30, 1869.....	November 30, 1869.
Township 16 south, range 16 west.....	22,937.11	September 30, 1869.....	November 30, 1869.
Township 17 south, range 16 west.....	22,901.66	September 30, 1869.....	November 30, 1869.
Township 18 south, range 16 west.....	22,892.73	September 30, 1869.....	November 30, 1869.
Township 19 south, range 16 west.....	22,902.05	September 30, 1869.....	November 30, 1869.
Township 20 south, range 16 west.....	22,999.32	September 30, 1869.....	November 30, 1869.
Township 16 south, range 17 west.....	22,849.97	November 4, 1869.....	November 30, 1869.
Township 17 south, range 17 west.....	22,994.78	November 4, 1869.....	November 30, 1869.
Township 18 south, range 17 west.....	23,034.18	November 4, 1869.....	November 30, 1869.
Township 19 south, range 17 west.....	23,048.25	November 4, 1869.....	November 30, 1869.
Township 20 south, range 17 west.....	23,064.23	November 4, 1869.....	November 30, 1869.
Township 16 south, range 18 west.....	22,648.11	November 4, 1869.....	November 30, 1869.
Township 17 south, range 18 west.....	22,920.08	November 4, 1869.....	November 30, 1869.
Township 18 south, range 18 west.....	22,970.89	November 4, 1869.....	November 30, 1869.
Township 19 south, range 18 west.....	23,013.57	November 4, 1869.....	November 30, 1869.
Township 20 south, range 18 west.....	23,043.54	November 4, 1869.....	November 30, 1869.
Township 16 south, range 19 west.....	22,512.87	November 4, 1869.....	November 30, 1869.
Township 17 south, range 19 west.....	22,965.44	November 4, 1869.....	November 30, 1869.
Township 18 south, range 19 west.....	22,980.26	November 4, 1869.....	November 30, 1869.
Township 19 south, range 19 west.....	23,009.08	November 4, 1869.....	November 30, 1869.
Township 20 south, range 19 west.....	23,029.44	November 4, 1869.....	November 30, 1869.
Township 17 south, range 20 west.....	22,979.31	November 4, 1869.....	November 30, 1869.
Township 18 south, range 20 west.....	23,002.35	November 4, 1869.....	November 30, 1869.
Township 19 south, range 20 west.....	23,027.63	November 4, 1869.....	November 30, 1869.
Township 20 south, range 20 west.....	23,028.09	November 4, 1869.....	November 30, 1869.

F.—Statement showing the description of lands, &c.—Continued.

Township and range.	Area.	Plats and field-notes— when transmitted.	Descriptive lists— when transmitted.
	<i>Acres.</i>		
Township 11 south, range 25 west.....	22,935.50	December 28, 1869.....	May 23, 1870.
Township 11 south, range 26 west.....	22,949.65	December 28, 1869.....	May 23, 1870.
Township 11 south, range 27 west.....	22,874.92	December 28, 1869.....	May 23, 1870.
Township 11 south, range 28 west.....	22,870.03	December 28, 1869.....	May 23, 1870.
Township 12 south, range 28 west.....	22,923.61	December 28, 1869.....	May 23, 1870.
Township 13 south, range 28 west.....	22,937.61	December 28, 1869.....	May 23, 1870.
Township 14 south, range 28 west.....	22,999.84	December 28, 1869.....	May 23, 1870.
Township 15 south, range 28 west.....	23,046.94	December 28, 1869.....	May 23, 1870.
Township 11 south, range 29 west.....	22,845.86	December 28, 1869.....	May 23, 1870.
Township 12 south, range 29 west.....	22,896.00	December 28, 1869.....	May 23, 1870.
Township 13 south, range 29 west.....	23,024.89	December 28, 1869.....	May 23, 1870.
Township 14 south, range 29 west.....	23,091.55	December 28, 1869.....	May 23, 1870.
Township 15 south, range 29 west.....	23,078.20	December 28, 1869.....	May 23, 1870.
Township 11 south, range 30 west.....	22,880.47	December 28, 1869.....	May 23, 1870.
Township 12 south, range 30 west.....	22,915.65	January 13, 1870.....	May 23, 1870.
Township 13 south, range 30 west.....	22,959.83	January 13, 1870.....	May 23, 1870.
Township 14 south, range 30 west.....	23,048.02	January 13, 1870.....	May 23, 1870.
Township 15 south, range 30 west.....	23,077.20	January 13, 1870.....	May 23, 1870.
Township 11 south, range 31 west.....	22,859.07	January 13, 1870.....	May 23, 1870.
Township 12 south, range 31 west.....	22,880.75	January 13, 1870.....	May 23, 1870.
Township 13 south, range 31 west.....	22,881.50	January 13, 1870.....	May 23, 1870.
Township 14 south, range 31 west.....	22,908.13	January 13, 1870.....	May 23, 1870.
Township 15 south, range 31 west.....	22,954.57	January 13, 1870.....	May 23, 1870.
Township 11 south, range 32 west.....	22,894.86	January 13, 1870.....	May 23, 1870.
Township 12 south, range 32 west.....	22,935.49	January 13, 1870.....	May 23, 1870.
Township 13 south, range 32 west.....	22,926.03	January 13, 1870.....	May 23, 1870.
Township 14 south, range 32 west.....	22,901.18	January 13, 1870.....	May 23, 1870.
Township 15 south, range 32 west.....	22,959.53	January 13, 1870.....	May 23, 1870.
Township 11 south, range 33 west.....	22,792.95	January 25, 1870.....	May 23, 1870.
Township 12 south, range 33 west.....	22,955.12	January 25, 1870.....	May 23, 1870.
Township 13 south, range 33 west.....	22,990.73	January 25, 1870.....	May 23, 1870.
Township 14 south, range 33 west.....	23,093.27	January 25, 1870.....	May 23, 1870.
Township 15 south, range 33 west.....	23,094.09	January 25, 1870.....	May 23, 1870.
Township 15 south, range 34 west.....	23,013.77	January 25, 1870.....	May 23, 1870.
Township 6 south, range 25 west.....	22,957.33	February 16, 1870.....	May 23, 1870.
Township 7 south, range 25 west.....	22,894.12	February 16, 1870.....	May 23, 1870.
Township 8 south, range 25 west.....	22,979.52	February 16, 1870.....	May 23, 1870.
Township 9 south, range 25 west.....	23,015.90	February 16, 1870.....	May 23, 1870.
Township 10 south, range 25 west.....	23,040.38	February 16, 1870.....	May 23, 1870.
Township 6 south, range 26 west.....	22,990.93	February 16, 1870.....	May 23, 1870.
Township 7 south, range 26 west.....	22,932.48	February 16, 1870.....	May 23, 1870.
Township 8 south, range 26 west.....	23,035.19	February 16, 1870.....	May 23, 1870.
Township 9 south, range 26 west.....	23,018.38	February 16, 1870.....	May 23, 1870.
Township 10 south, range 26 west.....	23,039.79	February 16, 1870.....	May 23, 1870.
Township 6 south, range 27 west.....	23,002.30	February 16, 1870.....	May 23, 1870.
Township 7 south, range 27 west.....	22,922.44	February 16, 1870.....	May 23, 1870.
Township 8 south, range 27 west.....	22,988.74	February 16, 1870.....	May 23, 1870.
Township 9 south, range 27 west.....	22,964.51	February 16, 1870.....	May 23, 1870.
Township 10 south, range 27 west.....	22,975.14	February 16, 1870.....	May 23, 1870.
Township 6 south, range 28 west.....	22,983.25	February 16, 1870.....	May 23, 1870.
Township 7 south, range 28 west.....	22,907.76	February 16, 1870.....	May 23, 1870.
Township 8 south, range 28 west.....	22,946.28	February 16, 1870.....	May 23, 1870.
Township 9 south, range 28 west.....	23,014.13	February 16, 1870.....	May 23, 1870.
Township 10 south, range 28 west.....	23,044.84	February 16, 1870.....	May 23, 1870.
Township 6 south, range 29 west.....	23,007.58	February 16, 1870.....	May 23, 1870.
Township 7 south, range 29 west.....	22,921.45	February 16, 1870.....	May 23, 1870.
Township 8 south, range 29 west.....	22,941.65	February 16, 1870.....	May 23, 1870.
Township 9 south, range 29 west.....	22,963.60	February 16, 1870.....	May 23, 1870.
Township 10 south, range 29 west.....	23,009.82	February 16, 1870.....	May 23, 1870.
Township 6 south, range 30 west.....	22,925.17	February 16, 1870.....	May 23, 1870.
Township 7 south, range 30 west.....	22,989.50	February 16, 1870.....	May 23, 1870.
Township 8 south, range 30 west.....	23,024.94	February 16, 1870.....	May 23, 1870.
Township 9 south, range 30 west.....	22,996.76	February 16, 1870.....	May 23, 1870.
Township 10 south, range 30 west.....	22,991.12	February 16, 1870.....	May 23, 1870.
Township 6 south, range 31 west.....	22,775.87	February 16, 1870.....	May 23, 1870.
Township 7 south, range 31 west.....	22,880.53	February 16, 1870.....	May 23, 1870.
Township 8 south, range 31 west.....	22,956.69	February 16, 1870.....	May 23, 1870.
Township 9 south, range 31 west.....	22,984.99	February 16, 1870.....	May 23, 1870.
Township 10 south, range 31 west.....	23,003.99	February 16, 1870.....	May 23, 1870.
Township 6 south, range 32 west.....	22,764.61	February 16, 1870.....	May 23, 1870.
Township 7 south, range 32 west.....	22,796.00	February 16, 1870.....	May 23, 1870.
Township 8 south, range 32 west.....	22,785.56	February 16, 1870.....	May 23, 1870.
Township 9 south, range 32 west.....	22,850.77	February 16, 1870.....	May 23, 1870.
Township 10 south, range 32 west.....	22,989.28	February 16, 1870.....	May 23, 1870.
Township 11 south, range 34 west.....	22,789.78	February 23, 1870.....	May 23, 1870.
Township 12 south, range 34 west.....	22,934.44	February 23, 1870.....	May 23, 1870.
Township 13 south, range 34 west.....	22,963.09	February 23, 1870.....	May 23, 1870.
Township 14 south, range 34 west.....	22,934.48	February 23, 1870.....	May 23, 1870.
Township 11 south, range 35 west.....	22,791.08	February 23, 1870.....	May 22, 1870.
Township 12 south, range 35 west.....	22,954.55	February 23, 1870.....	May 23, 1870.
Township 13 south, range 35 west.....	22,951.98	February 23, 1870.....	May 23, 1870.

F.—Statement showing the description of lands, &c.—Continued.

Township and range.	Area.	Plats and field-notes— when transmitted.	Descriptive lists— when transmitted.
	<i>Acres.</i>		
Township 14 south, range 35 west.....	22,990.76	February 23, 1870.....	May 23, 1870.
Township 15 south, range 35 west.....	23,070.26	February 23, 1870.....	May 23, 1870.
Township 16 south, range 29 west.....	22,482.86	March 21, 1870.....	May 23, 1870.
Township 16 south, range 21 west.....	22,493.14	March 21, 1870.....	May 23, 1870.
Township 17 south, range 21 west.....	22,973.09	March 21, 1870.....	May 23, 1870.
Township 18 south, range 21 west.....	22,976.07	March 21, 1870.....	May 23, 1870.
Township 19 south, range 21 west.....	22,974.24	March 21, 1870.....	May 23, 1870.
Township 20 south, range 21 west.....	23,019.59	March 21, 1870.....	May 23, 1870.
Township 16 south, range 22 west.....	22,555.54	March 21, 1870.....	May 23, 1870.
Township 17 south, range 22 west.....	22,927.39	March 21, 1870.....	May 23, 1870.
Township 18 south, range 22 west.....	22,969.81	March 21, 1870.....	May 23, 1870.
Township 19 south, range 22 west.....	23,018.42	March 21, 1870.....	May 23, 1870.
Township 20 south, range 22 west.....	23,021.33	March 21, 1870.....	May 23, 1870.
Township 16 south, range 23 west.....	22,764.38	March 21, 1870.....	May 23, 1870.
Township 17 south, range 23 west.....	22,953.25	March 21, 1870.....	May 23, 1870.
Township 18 south, range 23 west.....	22,989.04	March 21, 1870.....	May 23, 1870.
Township 19 south, range 23 west.....	22,985.87	March 21, 1870.....	May 23, 1870.
Township 20 south, range 23 west.....	23,019.43	March 21, 1870.....	May 23, 1870.
Township 16 south, range 24 west.....	22,858.63	March 21, 1870.....	May 23, 1870.
Township 17 south, range 24 west.....	22,890.03	March 21, 1870.....	May 23, 1870.
Township 18 south, range 24 west.....	22,945.30	March 21, 1870.....	May 23, 1870.
Township 19 south, range 24 west.....	22,943.62	March 21, 1870.....	May 23, 1870.
Township 20 south, range 24 west.....	22,967.57	March 21, 1870.....	May 23, 1870.
Township 12 south, range 25 west.....	23,101.94	March 21, 1870.....	May 23, 1870.
Township 13 south, range 25 west.....	23,115.42	March 21, 1870.....	May 23, 1870.
Township 14 south, range 25 west.....	23,087.88	March 21, 1870.....	May 23, 1870.
Township 15 south, range 25 west.....	22,988.67	March 21, 1870.....	May 23, 1870.
Township 12 south, range 26 west.....	23,039.08	March 21, 1870.....	May 23, 1870.
Township 13 south, range 26 west.....	22,822.55	March 21, 1870.....	May 23, 1870.
Township 14 south, range 26 west.....	22,960.02	March 21, 1870.....	May 23, 1870.
Township 15 south, range 26 west.....	23,042.97	March 21, 1870.....	May 23, 1870.
Township 12 south, range 27 west.....	22,974.01	March 21, 1870.....	May 23, 1870.
Township 13 south, range 27 west.....	23,056.00	March 21, 1870.....	May 23, 1870.
Township 14 south, range 27 west.....	22,960.81	March 21, 1870.....	May 23, 1870.
Township 15 south, range 27 west.....	23,015.60	March 21, 1870.....	May 23, 1870.
Total.....	4,394,715.30		

Statement showing the description of lands and area of same, for which duplicate plats and transcripts of field-notes have been transmitted to the Department, and triplicate plats and descriptive lists have been furnished the local land office at Humboldt, during the fiscal year ending June 30, 1870.

Township and range.	Area.	Plats and field-notes— when transmitted.	Descriptive lists— when transmitted.
Fractional township 35 south, range 21 east..	565.56	October 21, 1869.....	November 2, 1869
Fractional township 35 south, range 22 east..	7,793.11	October 21, 1869.....	November 2, 1869
Total.....	8,358.67		

Statement showing the description of lands and area of same, for which duplicate plats and transcripts of field-notes have been transmitted to the Department, and triplicate plats and descriptive lists have been furnished the local land office at Topeka, during the fiscal year ending June 30, 1870.

Township and range.	Area.	Plats and field-notes— when transmitted.	Descriptive lists— when transmitted.
Fractional township 5 south, range 21 east..	261.35	November 12, 1869....	November 12, 1869.
Total.....	261.35		

G.—Statement showing the estimated expense, number of miles, and character of work for which contracts have been entered into for surveying in Kansas, and chargeable to appropriation for such surveys, approved July 15, 1870.

No. of contract.	Name of deputy.	Standard lines.	Township lines.	Section lines.	Rate per mile.	Estimated cost.
350	Wileox & Mong.....	82	.....	.....	\$10 00	\$820 00
350	Wileox & Mong.....	.....	83	.....	6 00	498 00
350	Wileox & Mong.....	.....	.....	1,700	5 00	8,500 00
351	Armstrong, Burwell & Urten.....	280	.....	.....	10 00	2,800 00
351	Armstrong, Burwell & Urten.....	.....	402	.....	6 00	2,412 00
351	Armstrong, Burwell & Urten.....	.....	.....	2,100	5 00	10,500 00
352	McClure, Cosgray & Armstrong.....	.....	402	.....	6 00	2,412 00
352	McClure, Cosgray & Armstrong.....	.....	.....	2,400	5 00	12,000 00
	Total.....	362	887	6,200	.....	33,942 00

H.—Estimate of sums required for the extension of surveys in the State of Kansas for the fiscal year ending June 30, 1872.

Surveys estimated.	Miles.	Rate.	Cost.
For surveying the exterior lines of townships lying between the base line and the first standard parallel, and the third guide meridian west, and the west boundary of Kansas.	882	\$6 00	\$5,292 00
The exterior lines of townships lying between the fourth guide meridian west, and the west boundary of Kansas, and the third and fourth standard parallels south.	480	6 00	2,880 00
The exterior lines of townships lying between the first and second guide meridians west, and the fourth standard parallel south, and the north boundary of the Osage trust lands.	430	6 00	2,580 00
For surveying the subdivisional lines of townships 1, 2, 3, 4, 5, 16, 17, 18, 19, and 20 south, of ranges 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, and 42 west.	10,800	5 00	54,000 00
Also townships 21, 22, 23, 24, and 25, and fractional township 26 south, of ranges 9, 10, 11, 12, 13, 14, 15, and 16 west.	2,720	5 00	13,600 00
Total.....	.....	.....	78,352 00

I.—Estimate of sums required for office expenses for the fiscal year ending June 30, 1872.

Salary of surveyor general.....	\$2,000 00
Salary of chief clerk.....	1,600 00
Salary of principal draughtsman.....	1,300 00
Salary of assistant draughtsman.....	1,200 00
Salary of accountant.....	1,200 00
Salary of two copyists.....	2,200 00
Messenger, rent, and other incidental expenses.....	2,000 00
Total.....	11,500 00

No. 17 F.—Report of the surveyor general of Nebraska.

SURVEYOR GENERAL'S OFFICE,
Plattsmouth, Nebraska, August 31, 1870.

SIR: In accordance with your instructions of May 2, 1870, I have the honor to submit herewith the annual report of this office, in duplicate, showing the condition of the public surveys and the operations of the office in the district of Iowa and Nebraska, during the fiscal year ending June 30, 1870.

No. 1, among the accompanying tabular statements, gives the amount expended for salaries of surveyor general and clerks during the fiscal year aforesaid.

No. 2 gives the amount expended for rent of office and incidental expenses during the same term.

No. 3 shows the extent and cost of surveys executed in Nebraska during the fiscal year.

Nos. 4, 5, 6, 7, and 8 give the description and area of lands for which township maps and descriptive lists have been furnished to the registers of the land offices in the Dakota City, Vermillion, Nemaha, South Platte River, and Grand Island land districts, at Dakota, Vermillion, Dakota Territory, Beatrice, Lincoln, and Columbus, during the said fiscal year.

No. 9 gives the numbers of contracts, description of surveys, miles, rate, estimated cost of exterior boundaries and subdivisions, amount of contracts, penal sums in the bonds, and object of surveys for which contracts have been entered into, which are now being executed, and which are all properly chargeable to the balance of appropriation of March 3, 1869, to the special deposits made by the Union Pacific Railroad Company, for field work in the public surveys in Nebraska, and to the appropriation of July 15, 1870.

No. 10 is an estimate of sums required for the further extension of the public surveys in the State of Nebraska during the fiscal year ending June 30, 1872.

No. 11 is an estimate of sums required for office expenses during the same term.

No. 12 is a sectional map of Nebraska, drawn on a scale of 12 miles to an inch, on which all standard, exterior, and section lines that are surveyed and established, and all of those now being surveyed, are ruled, the latter having a distinctive mark. All surveys proposed for another season are indicated by dotted lines. This mode of construction, with the scale adopted, is the same as in my annual map of last year.

The names and boundaries of counties, the limits of the two railroad grants, the Indian and military reservations, and the half-breed lands, as also of the five United States land districts, are all given in a way in which the primary object of the map does not become obscured. I am aware that usually only a township diagram, on a smaller scale, not showing much more than the present condition and proposed extension of the public surveys, has been required, or expected, by the honorable Commissioner of the General Land Office, but, having the opportunity, something more elaborate has been drawn for this year, which, it is hoped, will be found complete and reliable.

CONDITION OF THE PUBLIC SURVEYS.

All surveys contracted for in 1869 out of the balance of the appropriation of July 20, 1868, have been completed, both as to field and office work, and all surveys contracted for in 1869 out of the appropriation of March 3, 1869, have also been completed, both in the field and office, within the fiscal year, except those of Hiram C. Fellows, contract No. 24, and Paul and Gilbert, contract No. 30.

Mr. Fellows's survey, being dependent upon the extension of the third standard parallel by Messrs. Allison and Kelsey and Burch and Warner for the distance of 144 miles for a point of commencement, and upon the survey and establishment of the boundary line between Nebraska and Colorado on the south, and between Nebraska and Wyoming on the west of his district, by Oliver N. Chaffee, astronomer and surveyor, for a base and limit, was necessarily so delayed, as to be compelled, by the early frosts and the difficulty of constructing mounds with frozen sod, to defer the completion of his exterior lines until the spring of 1870, which has been done, and the diagram and transcripts are now fully ready for transmission, with his account.

On account of the hostility of the Indians, and the inadequacy of defense, Messrs. Paul and Gilbert were also allowed to defer their survey of standard lines on the Elkhorn until the present season, and, as seen in statement No. 9, additional surveys of exteriors and subdivisions have been assigned to Messrs. Paul & Brother.

The work of 1869, though so nearly completed and so rigidly held within the limits and restrictions of the United States laws, the surveying manual and supplement, and carefully drawn special instructions, has not been without disaster and loss of life to some who were tempted by the liberal compensation allowed by the Government to risk their all upon the beautiful plains of Nebraska; and for poor Nelson Buck, who had left behind in Illinois his genial family and peaceful fireside, there was no "primrose path of dalliance and ease," but a merciless death from an insidious foe; and such cases cause regret that the military arm is not long enough to prevent their frequent recurrence. Mr. Buck and his party, viz., J. L. Logan, J. C. Haldeman, F. C. McFarland, J. R. Nettleton, W. McCulloch, J. V. Brown, Linden L. Crocker, Stanley Meecham, H. L. Levi, and James Wolteman, were all killed by the Indians, while on the Beaver, a tributary of the Republican, near his district of survey, embraced in his contract, No. 22, and as the execution of his work was necessary, in order to give Messrs. William E. Daugherty & Brother a starting point in their contract, No. 23, as soon as there no longer remained any doubt of the decease of Mr. Buck, his work was relet, in contract No. 31, to the Messrs. Daugherty; and after a gallant fight, all day, behind slight intrenchments, against two hundred red-skins, in which they bagged three, and after a masterly retreat by moonshine over the cacti of the plains, they accomplished, successfully, what cost Mr. Buck so dearly.

Eleven contracts, for the surveys of this season, have been entered into, chargeable to balances as hereinbefore stated, and the annual appropriation of July 15, 1870. In selecting these districts of survey, I have been governed by your instructions of May 18, 1869, and those of July 30, 1870, extending the survey of railroad lands, and in regions where settlements now or soon will appear, and preparing standard and exterior lines for the work of subdivision at a future time.

With the arms and ammunition furnished the surveyors, by permission of the honorable Secretary of War, it is hoped the parties now in the field may successfully defend themselves and complete some important work. The valleys of the Platte, Republican, Loup, and Elkhorn, will be further explored, and the natural north boundary, along the Niobrara, extended. The valley of the Lodge Pole will be developed nearly as high up as the eastern boundary of Wyoming.

The boundary survey by Mr. Chaffee was thoroughly tested, not only by the intrinsic evidence of his own notes and calculations, but by closing upon it at intervals of one mile for the distance of forty-eight miles of subdivisions by P. C. Patterson, deputy surveyor, along the parallel of latitude, and at intervals of six miles for sixty miles more, in the closings of standard and exterior lines on same, by Hiram C. Fellows, deputy surveyor.

As in my last report, I would again respectfully refer to the importance of the speedy survey and establishment of the boundary line between Nebraska and Dakota, which is about 227 miles long, and, at \$25 per mile, would only cost \$5,675 for field work. The mouth of the Keya Paha, an important point in this boundary, being undetermined as to geographical position, renders the limit of a survey in that part of Nebraska indefinite, and the estimate of cost difficult to determine.

OFFICE WORK.

During the year 378 township maps, 48 diagrams of standard lines, and 20 diagrams of exterior lines have been drawn; the original field-notes of 1,180 miles and 59.31 chains of standard lines, 1,885 miles and 17.59 chains of exterior lines, and 7,131 miles and 24.99 chains of subdivision lines, amounting in all to 10,197 miles and 21.89 chains, have been carefully examined as to their conformity with the law and instructions, transcribed for preservation in the General Land Office, and filed in this office to await the finishing labor of the binder. The cost of these ten thousand and odd miles of public survey has only been \$68,183 04, and the total office expenses \$9,197 78.

The fifteen triplicate maps and three transcripts of field-notes of the State line, with all their astronomical calculations, have been examined and compared.

There have been added 3,274.06 acres to the domain at the disposal of the Dakota City land register, 1,656.50 to Vermillion, 435,893.77 to Nemaha, 597,149.14 to South Platte River, and 1,494,496.97 to Grand Island, making an aggregate increase of public lands for sale of 2,532,470.44 acres.

As the contract diagram in this office and the accompanying map will show, the work of the year above alluded to leaves the unsurveyed portions of the State in good shape; one-third being old surveys completed on the east, one-third on the southwest, blocked out with standards and exteriors and closed up from the base line, and the remainder in the northwest left with a broad basis along the fourth standard parallel north, from which to operate in the unsurveyed field.

As a result from the many complex computations for cost of survey and office work upon the lands of the Union Pacific Railroad Company, in addition to the sum of \$2,757 54 for survey and \$548 69 for office work, being in the aggregate \$3,306 23, as stated in last report, this company has sent to this office duplicate certificates of deposit, amounting to \$6,522 87 for survey and \$1,361 86 for office work, of date October 6, 1869. These deposits in the Omaha National Bank, to the credit of the United States, are supposed to be available to this office for the prosecution of the public surveys during this season, and my certificates as to the accuracy of the amounts have been affixed to the lists furnished to the register of the proper United States land office.

More than the usual amount of time and labor has been expended in the miscellaneous work of preparing contracts and bonds for surveys in quadruplicate, special instructions in duplicate, and recording them, diagrams, outline maps, and field-notes for the guidance of deputies in the field; examination of the field-notes of the public surveys, as they are returned by the surveyors, official correspondence and record of same, making out and recording the accounts of deputy surveyors and the quarterly accounts of the office, and certificates to vouchers, with record of same.

This report alone, in duplicate, with the recording of same, to be reliable, consumes much of the time of the office.

The general statistics required by the honorable Commissioner of the General Land Office, and embodied in this report, so useful in exhibiting the industrial and other resources of Nebraska, have made necessary an extensive preliminary correspondence with those in possession of the information sought, and an enlarged postage account.

The preparation of a large map of the State, like that accompanying this report, is

also the work of several weeks for one draughtsman, and, being reduced from the original township maps, is a compilation from the most reliable source.

PROJECTED SURVEYS.

The work in this district proposed for another year is with the view of extending the subdivisions within the limits of the Union Pacific Railroad grant, that company having completed the extensive work for which the lands were donated by the United States.

To meet the wants of the frontier settlements along the various fertile valleys of this State seems to be now a paramount object. Pioneer organizations for colonization and mutual protection along the wooded and watered valley of Republican River are already on the march, and will soon be in advance of the public surveys. And so of the Niobrara in the north, whither a railroad is now being constructed from Omaha.

It is therefore hoped that Congress will appropriate the amount given in the accompanying annual estimate for surveys, though much larger than the appropriation of 1870.

The fragmentary survey of the old bed of the Missouri River, where it has cut across a peninsula of Dakota, near the mouth of the Big Sioux River, with contiguous accretions and riparian changes, has been completed, and the total area thus added to the public domain has by act of Congress been made part and parcel of the State of Nebraska, by and with the consent of said State, hereafter to be given.

STATISTICS.

Below will be found a series of reports from a number of counties in this State, which, in the aggregate, make something like an approach to a reply to the numerous interrogatories contained in your letter of March 30, 1870. That the replies contained in these county reports should fall short of the full and explicit information sought to be obtained by the honorable Commissioner of the General Land Office does not disappoint me. When so many of the counties are but lately organized, and others, from which statistics have been obtained, are not organized at all, it was to be expected that minute and detailed reports could hardly be looked for. Another reason operating against full and satisfactory answers to the questions propounded is, that the parties to whom application was made are in most cases busily employed attending to their own harvests at the very season when the information sought to be obtained is demanded.

Nothing short of a strong desire, on the part of the gentlemen with whom this office has been in correspondence, to set forth the advantages of their particular section of country could be relied on for obtaining any information whatever, and as no appropriation is provided for compensating the labors incident to such work, but the whole of it is sought for gratuitously, as a matter of course this office had to patiently await the action of the parties with whom correspondence was opened with a view to obtaining the information sought by the honorable Commissioner, and no compulsory efforts could be used to render them any more perfect than they are.

To enable the honorable Commissioner to see clearly the material furnished this office as a basis from which to approximate replies to his interrogatories, I have preferred to submit the reports in detail, arranging the counties in alphabetical order, and submitting them precisely as they were received here, appending to each the names of the correspondent, who, in most cases, are the county clerks of the respective counties reported on.

BURT COUNTY.

North boundary, Omaha reservation; east boundary, Missouri River; south boundary, line between townships 19 and 20, ranges 9, 10, 11, and townships 20 and 21, range 8 east, 6th principal meridian; west boundary, guide meridian and line between ranges 7 and 8 east, 6th principal meridian.

Q. What is the number of acres under cultivation?—A. From the best information I have and can get, there are at the present season 100,000 acres of land in cultivation of every kind of grain.

Q. What is the number of acres of each kind of crop?—A. The following is as near correct as it can be got at: Wheat, 50,000 acres; oats, 25,000; corn, 25,000.

Q. What is the average production of each crop per acre?—A. For ordinary good seasons the average yield of wheat is 20 bushels to the acre; oats, 30 to 60 bushels; corn, 65 to 80 bushels.

Q. What are the conditions of climate, soil, &c., suitable to each?—A. The climate is well adapted to raising all kinds of grain, such as wheat, oats, barley, corn, &c. Grass grows abundantly on high, rolling land, as well as in the valleys. The soil on the river bottoms is rich, sandy loam of a deep-black color, and very strong. On

the table lands the soil is very rich, but not as dark as the bottom land, being free from sand. Rich grass grows on the highest knobs. Being well watered, it offers great inducements to stock-raisers; winters being short, and hay plenty by the making.

Q. What are the capacities for tea culture; whether any experiments have been made?—A. No experiments having been made in tea culture, I am unable to say, but am of the impression that it cannot be raised to any extent.

Q. What are the capacities for silk culture; whether any experiments have been made?—A. No experiments have been made in the county.

Q. What is the amount of wool produced, its value, and kind of sheep, &c.?—A. A good wool-growing county; kind of sheep, native. Average per head, about three to four pounds; quality fair; value from 28 to 30 cents per pound.

Q. What is the amount of flax raised, cost and quantity per acre?—A. Some flax has been raised in the county, but as to the quantity and quality I cannot say, or as to the cost of raising.

Q. What other fibrous productions?—A. None.

Q. What mineral productions?—A. None.

Q. What facilities for manufacture, water-power, convenient access to fuel, and its cost, cost of raw material for manufacture?—A. Poor; fuel scarce and high, but little raw material, and poor market.

Q. What commercial facilities, natural and artificial means of communication, character and amount of foreign and domestic commerce, with the prospective expansion of local and general trade?—A. Missouri River whole length of county on east, also railroad bordering the county on east and south. Daily line of coaches through the county from Omaha to Sioux City, Iowa. The future prospect of the county for a future trade is good, as the community is a farming one, and have mostly just opened farms.

Q. What is the total value, gold basis, of real estate and personal property?—A. \$2,000,000.

Q. What are the total values of raw materials produced; total values added to raw material by manufacture?—(No answer.)

Q. What are the aggregate profits of capital employed in transportation, in merchandising, invested in loans to General or State Governments, and municipal corporations?—(No answer.)

Q. What is the aggregate amount paid in salaries and wages to professional men, clerks, messengers, conductors, brakemen, officers and sailors, &c.?—A. Clerks, \$50 per month; teachers, \$40; officers, \$1,000 to \$1,200 per year.

Q. What are the names of all towns and villages in your county, with the distance and direction from your county seat, and exact locality by section, township, and range? (No answer.)

CASS COUNTY.

North boundary, beginning at a point on the guide meridian east two miles south of corner to townships 12 and 13 north, thence due east to line between ranges 9 and 10 east, 3d standard parallel north and Platte River; east boundary, Missouri River; south boundary, line between townships 9 and 10 north; west boundary, guide meridian east. ●

Q. What is the number of acres under cultivation?—A. Fifty-five thousand five hundred and twenty.

Q. What is the number of acres of each kind of crop?—A. There are in our county, of corn, 22,000 acres; wheat, 18,000; oats, 10,000; rye, barley, potatoes, vegetables, trees, orchard and forest, &c., 5,520.

Q. What is the average production of each crop per acre?—A. Average production of corn per acre, 45 bushels; wheat, 18; oats, 45; barley, 25; rye, 22; potatoes, 200.

Q. What are the conditions of climate, soil, &c., suitable to each?—A. The climate is mild and pleasant, with a much higher average temperature than the same latitude at any point in the United States, except, it may be, on the Pacific coast. Enough rain falls to make all crops produce in luxurious abundance. The soil is of the richest quality, and all of it very far superior to the famed Genesee flats of New York.

Q. What are the capacities for tea culture; whether any experiments have been made?—A. No experiments.

Q. What are the capacities for silk culture; whether any experiments have been made?—A. No experiments. The mulberry grows rather plentifully in our groves.

Q. What is the amount of wool produced, its value, and kind of sheep, &c.?—A. This county is well adapted to wool-growing. Sheep are never troubled with the diseases so common to the older States. The amount of wool produced in the county last year was 5,429 pounds. Value, \$2,000. Number of sheep in county, 2,285, mostly merino.

Q. What is the amount of flax raised, cost and quantity per acre?—A. Flax does remarkably well. But little raised on account of the difficulty of thrashing. None has been raised except for the seed. Yield, 15 bushels per acre. Cost, not known.

Q. What other fibrous productions?—A. None raised, except a little hemp, which grows magnificently.

Q. What mineral productions?—A. None.

Q. What are the facilities for manufacture, water-power, convenient access to fuel, and its cost, cost of raw material for manufacture?—A. Good, excellent. Our access to fuel is very convenient for a Nebraska county. The Burlington and Missouri River Railroad has opened to us the vast coal fields of Iowa, and brings coal to our very doors for \$8 per ton. Wood is worth from \$3 to \$6 per cord. Cost of raw material for manufacture, \$93,860.

Q. What are the commercial facilities, natural and artificial means of communication, character and amount of domestic and foreign commerce, with the prospective expansion of local and general trade?—A. Our commercial facilities are very good. The Missouri River runs along our entire eastern boundary, opening up to us by water the trade of St. Louis and the South, and the vast mining regions of the Northwest. We have an eastern connection over the Burlington and Missouri, Chicago, Rock Island and Pacific, Chicago and Northwestern, and the Chicago, Burlington, and St. Joseph's Railroads. Character and amount of domestic and foreign commerce not known. The prospective expansion of trade is very great.

Q. What is the total value, gold basis, of real estate and personal property?—A. Four million dollars.

Q. What are the values of raw material produced; total values added to raw material by manufacture?—A. Value of raw material not known. Value added to raw material by manufacture, \$228,308.

Q. What are the aggregate profits of capital employed in transportation, in merchandising, invested in loans to General or State Governments, and municipal corporations?—A. Profits of capital employed in transportation, \$330,000; merchandising, \$125,000.

Q. What is the aggregate amount paid in salaries and wages to professional men, clerks, messengers, conductors, brakemen, officers and sailors, &c?—A. One hundred and fifty thousand dollars.

Q. What are the names of all towns and villages in your county, with the distance and direction from your county seat, and exact locality by section, township, and range?—A. Plattsmouth, county seat, is situated on sections 7, 12, 13, and 18, township 12 north, ranges 13 and 14 east.

Avoca is situated on section 33, township 10 north, range 12 east, 17 miles southwest from county seat.

Center Valley is situated on section 5, township 10 north, range 12 east, 15 miles southwest from county seat.

Eagle is situated on section 22, township 9 north, range 9 east, 30 miles southwest from county seat.

Elmwood is situated on section 34, township 11 north, range 9 east, 23 miles southwest from county seat.

Factoryville is situated on section 28, township 11 north, range 13 east, 13 miles south-southwest from county seat.

Glendale is situated on section 19, township 12 north, range 12 east, 12 miles west from county seat.

Greenwood is situated on section 32, township 12 north, range 9 east, 32 miles west from county seat.

Kenosha is situated on section 33, township 11 north, range 14 east, 11 miles south from county seat.

Louisville is situated on section 15, township 12 north, range 11 east, 16 miles west from county seat.

Mount Pleasant is situated on section 5, township 10 north, range 13 east, 10 miles south-southwest from county seat.

Omaha Junction is situated on section 36, township 13 north, range 12 east, 8 miles north-northwest from county seat.

Oreapolis is situated on section 6, township 12 north, range 14 east, 2 miles north from county seat.

Rock Bluffs is situated on sections 7, 12, 16, and 18, township 11 north, range 14 east, 6 miles south from county seat.

South Bend is situated on section 13, township 12 north, range 10 east, 20 miles west from county seat.

Three Grove is situated on section 24, township 11 north, range 13 east, 8 miles south from county seat.

Union is situated on section 13, township 10 north, range 13 east, 12 miles south from county seat.

Weeping Water is situated on sections 1 and 35, townships 10 and 11 north, range 11 east, 13 miles southwest from county seat.

Eight Mile Grove is situated on section 1, township 11 north, range 12 east, 8 miles southwest from county seat.

E. A. KIRKPATRICK.

CEDAR COUNTY.

North boundary, Missouri River; east boundary, range line between ranges 3 and 4 east, 6th principal meridian; south boundary, township line between townships 27 and 28 north; west boundary, range line between ranges 1 and 2 west, 6th principal meridian.

Q. What is the number of acres under cultivation?—A. Fifteen thousand, as near as can be got at.

Q. What is the number of acres of each kind of crop?—A. Ten thousand acres or wheat, 3,000 acres of oats and barley, 1,000 acres of corn, and 1,000 of potatoes and vegetables.

Q. What is the average production of each crop per acre?—A. Of wheat, 25 bushels; oats, 65; barley, 45; corn, 50; and potatoes, 300.

Q. What are the conditions of climate, soil, &c., suitable to each?—A. Climate temperate and healthy, and good for raising any kind of stock; soil, rich, black earth, suitable to any kind of summer grain, as well as fruit trees and grape vines, and all kinds of vegetables.

Q. What are the capacities for tea culture; whether any experiments have been made?—A. No experiments have been made.

Q. What are the capacities for silk culture; whether any experiments have been made?—A. No experiments have been made.

Q. What is the amount of wool produced, its value, and kind of sheep, &c.?—A. The amount produced is about 3,000 pounds; value, 25 cents per pound; sheep, mostly merino.

Q. What is the amount of flax raised; cost and quantity per acre?—A. No experiments have been made.

Q. What other fibrous productions?—A. Various other productions.

Q. What mineral productions?—A. Chalk-stone, good for any purpose.

Q. What facilities for manufacture, water-power, convenient access to fuel, and its cost, cost of raw material for manufacture?—A. Steam, and plenty of water-power; fuel in abundance; wood, \$2 per cord. No manufactures, except saw and grist mill.

Q. What commercial facilities, natural and artificial means of communication, character and amount of domestic and foreign commerce, with the prospective expansion of local and general trade?—A. Inviting; Missouri River; tri-weekly stage; stock and grain.

Q. What is the total value, gold basis, of real estate and personal property?—A. Real estate, \$800,000; personal property, \$200,000.

Q. What are the total values of raw material produced; total values added to raw material by manufacture?—(No answer returned.)

Q. What are the aggregate profits of capital employed in transportation; in merchandising; invested in loans to General or State Governments, and municipal corporations?—A. Capital employed in transportation, none; in merchandising, \$40,000.

Q. What is the aggregate amount paid in salaries and wages to professional men, clerks, messengers, conductors, brakemen, officers and sailors, &c.?—A. Clerks, about \$100 per month; officers, about \$3 per day.

Q. What are the names of all towns and villages in your county, with the distance and direction from your county seat, and exact locality by section, township, and range?—A. St. Helena, Elm Grove, Antelope Creek, and St. James.

P. C. NISSON.

COLFAX COUNTY.

North boundary, township line between townships 20 and 21; east boundary, range line between ranges 4 and 5 east, 6th principal meridian; south boundary, Platte River; and west boundary, range line between ranges 1 and 2 east.

Q. What is the number of acres under cultivation?—A. I am not prepared to give a correct amount of acres under cultivation in our county, as there has been a great deal of raw prairie broken this past summer, in different parts of the county, but from my judgment I should think there were about 14,000 or 18,000 acres.

Q. What is the number of acres of each kind of crop?—A. Wheat, 2,500 acres; corn, 6,000 acres; oats, 2,000 acres; potatoes, 500 acres; beans, 50 acres; onions, 10 acres; rye, 200 acres; barley, 50 acres; the balance in melons, vegetables, &c.

Q. What is the average production of each crop per acre?—A. Wheat, 20 bushels; corn, 50 bushels; oats, 60 bushels; rye, 20 bushels; barley, 15 bushels; potatoes, 180 bushels.

Q. What are the conditions of climate, soil, &c., suitable to each?—A. Climate and soil excellent for each article mentioned. Winters pleasant, with an occasional storm; summers hot, springs early, rain in proper quantities for farming.

Q. What are the capacities for tea culture; whether any experiments have been made?—A. No experiments.

Q. What are the capacities for silk culture; whether any experiments have been made?—A. No experiments.

Q. What is the amount of wool produced, its value, and kind of sheep, &c.?—A. A few sheep introduced very lately; do not know anything about them; not over sixty in the county.

Q. What is the amount of flax raised, cost, and quantity per acre?—A. Flax, none raised in the county.

Q. What other fibrous productions?—A. No fibrous productions raised, although it is my opinion that we undoubtedly have the soil and climate for flax, &c.

Q. What mineral productions?—Q. Minerals, none yet discovered.

Q. What facilities for manufacture, water-power, convenient access to fuel, and its cost, cost of raw material for manufacture?—A. Water-power on Shell Creek is good; two water grist mills in county; fuel, not plenty; wood, four feet long, \$6 per cord; coal, \$12 per ton. Beets could be raised in almost any desirable quantity, as they grow here with little work and attention. Sugar manufacture could be carried on here.

Q. What commercial facilities, natural and artificial means of communication, character and amount of domestic and foreign commerce?—A. Union Pacific Railroad. The prospective expansion of local trade is governed by the settling of the county, which is filling up rapidly.

Q. What is the total value, gold basis, of real estate and personal property?—A. As property, both real and personal, is rising rapidly, I cannot give you any correct answer. However, town lots 66 by 132, from \$60 to \$500, owing to locality. Improved land, near town, \$50 per acre; raw prairie, \$10 to \$15; six miles or more, \$4 50 to \$7 per acre, gold.

Q. What is the total value of raw material produced, total value added to raw material by manufacture?—A. No manufactures.

Q. What are the aggregate profits of capital employed in transportation, in merchandising, invested in loans to General or State Governments, and municipal corporations?—A. Profits of capital invested in merchandising about 100 per cent., probably more.

Q. What is the aggregate amount paid in salaries and wages to professional men, clerks, messengers, conductors, brakemen, officers and sailors?—A. Telegraph operators, \$90 per month; assistant telegraph operators, \$75 per month; clerks, \$40 per month.

Q. What are the names of all towns and villages in your county, with the section, township, and range?—A. Schuyler, county seat of Colfax County; sections 14 and 15, township 17, range 2 east, 6th principal meridian.

Richland, 7 miles west, on Union Pacific Railroad, on section 16, township 17, range 2 east, 6th principal meridian.

DIXON COUNTY.

North boundary, Missouri River; east boundary, Missouri River and center of townships 27, 28, and 29 north, range 6 east, 6th principal meridian; south boundary, line between townships 26 and 27 north, and north boundary of Omaha reservation; west boundary, range line between ranges 4 and 5 east, 6th principal meridian.

Q. What is the number of acres under cultivation?—A. Nine thousand five hundred and eighty-three acres. There was only about half that number under cultivation last year, and the prospect is that the same will be four times as high next year. Emigration was as strong this season as in the ten years previous together.

Q. What is the number of acres of each kind of crop?—A. Wheat, about 6,187 acres; corn, 1,797 acres; potatoes, &c., 1,599 acres.

Q. What is the average production of each crop per acre?—A. Wheat averages 25 bushels per acre; corn, 45 bushels, and potatoes, 300 bushels.

Q. What are the conditions of climate, soil, &c., suitable to each?—A. Moderate climate; first-rate soil for small grain; heavy, rich, lime subsoil; splendid soil for grapes and hops, the same are growing wild, plentifully.

Q. What are the capacities for tea culture; whether any experiments have been made?—A. I think the climate is not adapted to tea culture. No experiments have been made.

Q. What are the capacities for silk culture, whether any experiments have been made?—A. Good capacity for silk culture; mulberries grow abundantly wild, along the banks of the Missouri River. No experiments have been made.

Q. What is the amount of wool produced, value and kind of sheep, &c.?—A. Wool growing only commenced; started with a few Merino and Southdown. The country seems to be very well adapted to sheep on account of its having bluffs, with rich pasture scattered around. Sheep bring now \$4.

Q. What is the amount of flax raised, cost, and quantity per acre?—A. Flax-raising has not been tried yet. I think it would be profitable.

Q. What other fibrous productions?—A. Have no knowledge of there being any cultivated.

Q. What mineral productions?—A. Coal, but not explored.

Q. What facilities for manufacture, water-power, convenient access to fuel, and its cost, cost of raw material for manufacture?—A. Water-power, good; high timber land, from \$5 to \$20 per acre; logs, \$8 per 1,000 feet; wheat, 50 cents per bushel; barley, 50 cents per bushel; coal and wood alongside of the Missouri River and creeks; great facilities for steam-power, coal and wood being plenty.

Q. What commercial facilities, natural and artificial means of communication, character and amount of domestic and foreign commerce, with the prospective expansion of local and general trade?—A. Missouri River front; the most extensive shipping point being what is now known as Texas City, on the Dakota Territory side, and Long City, on this side of the river, a ferry-boat connecting both places, and the richest country surrounding the same near and far. These two points will have a great future, and command a big commerce and trade. Railroads are projected in every direction through the country, and will open up our commerce with the neighborhood.

Q. What is the total value, gold basis, of real estate and personal property?—A. Probably \$500,000.

Q. What are the total values of raw material produced, total values added to raw material by manufacture?—A. Value of raw material produced, \$95,000; value added to same by manufacture, \$47,500.

Q. What are the aggregate profits of capital employed in transportation, in merchandising, invested in loans to General or State Governments, and municipal corporations?—A. Aggregate profits of capital employed in transportation not given; profits on merchandise, 100 per cent.; on loans to municipal corporations, 10 per cent.

Q. What is the aggregate amount paid in salaries and wages to professional men, clerks, messengers, conductors, brakemen, officers, sailors, &c.?—A. Wages paid to mail carriers, \$20 per month, and board; to farm hands, from \$1 to \$2 50 per day, and board.

Q. What are the names of all towns and villages in your county, with the distance and direction from your county seat, and exact locality by section, township, and range?—A. Poncah, county seat; section 22, township 30, range 6 east, 6th principal meridian.

Iona, northwest from Poncah, and 9 miles distant, in section 11, township 31, range 5 east, 6th principal meridian.

New Castle, $7\frac{1}{2}$ miles northwest from Poncah, in section 20, township 31, range 5 east, 6th principal meridian.

Long City, northeast $1\frac{1}{2}$ miles from Poncah, in section 11, township 30, range 6 east.

W. D. LONG,
County Clerk.

FILLMORE AND CLAY COUNTIES.

North boundary, line between townships 8 and 9 north; east boundary, 6th principal meridian; south boundary, line between townships 4 and 5 north; west boundary, line between ranges 8 and 9 west.

Q. What is the number of acres under cultivation?—A. One thousand acres.

Q. What is the number of acres of each kind of crop?—A. About 400 acres of wheat, 250 of oats, 150 of barley, 150 of corn; balance in potatoes, buckwheat, vegetables, &c.

Q. What is the average production of each crop per acre?—A. Wheat, 25 bushels; oats, 50 bushels; barley, 50 bushels; corn, 40 to 60 bushels; potatoes, 150 bushels; buckwheat, 35 bushels; tobacco, 650 to 700 pounds; sorghum, 60 to 80 gallons; broom-corn, 700 to 800 pounds.

Q. What are the conditions of climate, soil, &c., suitable to each?—A. These counties, situated as they are between the Blue Rivers, are well watered by numerous springs and rivulets, tributaries to the Blue Rivers, and are favored with an exceedingly genial and salubrious climate, peculiarly adapted to the profitable growth of the above-named crops. The soil is a rich vegetable mold, from 2 to 3 feet in depth, with just sand enough to keep it friable, warm, and quick. There are large quantities

of lime in the composition of the soil, also just enough salinous and alkaline qualities to enhance the growth of all cereals.

Q. What are the capacities for tea culture; whether any experiments have been tried?—(No answer.)

Q. What are the capacities for silk culture; whether any experiments have been tried?—A. Cannot be surpassed.

Q. What is the amount of flax raised, cost, and quantity per acre?—A. Good for flax.

Q. What other fibrous productions?—A. All would do well.

Q. What mineral productions?—(No answer.)

Q. What facilities for manufacture, water-power, convenient access to fuel, and its cost, cost of raw material for manufacture?—A. These counties possess extensive manufacturing facilities. Along the West Blue, Little Blue, Big Sandy Rivers, and the North Fork of Turkey Creek, there are several good water privileges. These rivers are all well wooded, which makes access to fuel convenient and cheap. When the railroad is completed coal of a superior quality can be procured for from \$6 50 to \$10 per ton.

Q. What commercial facilities, natural and artificial means of communication, character and amount of domestic and foreign commerce, with prospective expansion of local and general trade?—A. The lack of commercial facilities, natural or artificial means of communication, has prevented these counties from becoming as fully developed as they otherwise would have been. Within the past six months the Burlington and Missouri River Railroad Company have proposed to run their line of road through, near the center of Fillmore, Clay, and Adams Counties, to Fort Kearny. This has given new life and energy to their present population, and caused a large amount of immigration. We are not only deprived of all commercial, but postal privileges. We have a population of nearly 500, and are obliged to go to adjoining counties for mail matter.

Q. What is the total value, gold basis, of real estate and personal property?—A. The total value, on a gold basis, of real estate and personal property, separate from Government, railroad, and school land, is about \$42,000.

The great want of these counties is a railroad, on which the pioneer settler can transport his goods and the materials of which his buildings must be constructed. Every train would bring civilization and comfort, and return laden with the products of the soil, stock, hogs, sheep, &c. This great want the energetic officers of the Burlington and Missouri River Railroad are exerting every effort to supply at the earliest possible date. This, with the other four roads aiming to connect with the Union Pacific Railroad at Fort Kearny, will give these counties all the railroad facilities that could be desired.

With these railroad facilities, the constant influx of immigration, the genial climate, the almost unbounded grazing facilities, the inexhaustible richness of the soil, the extensive resources for manufacture, must inevitably create an expansion of local and general trade, unprecedented in the annals of American history, and in less than five years place Fillmore and Clay Counties at the head of the list in Nebraska.

L. R. WARNER.

HALL COUNTY.

North boundary, line between townships 16 and 17 north; east boundary, line between ranges 8 and 9 west, 6th principal meridian; south boundary, Platte River; west boundary, line between ranges 11 and 12 west, 6th principal meridian.

Q. What is the number of acres under cultivation?—A. About 16,000 acres.

Q. What is the number of acres of each kind of crop?—A. Five thousand acres of oats, 2,000 of wheat, 6,000 of corn, 2,000 of barley, 500 of potatoes, and 500 of vegetables.

Q. What is the average production of each crop per acre?—A. Beets, 300 bushels per acre; corn, 50 bushels; wheat, 20 bushels; barley, 35 bushels; buckwheat, 45 bushels; oats, 50 bushels; potatoes, 200 bushels.

Q. What are the conditions of climate, soil, &c., suitable to each?—A. Climate, very healthy; soil, sandy loam—partly clay subsoil, especially adapted to corn, oats, barley, wheat, and vegetables in general, and very productive.

Q. What are the capacities for tea culture; whether any experiments have been made?—A. Has not been tried yet; probably too cold in winter.

Q. What are the capacities for silk culture; whether any experiments have been made?—A. Not adapted to this country; have been no experiments here; might do.

Q. What is the amount of wool produced, its value, and kind of sheep, &c.?—A. Cannot be surpassed; sheep do fine on our land; number of sheep, 2,000; wool produced, 7,000 pounds; good hardy kind; wool long, of very good quality, and bringing second highest price in eastern markets.

Q. What is the amount of flax raised, cost, and quantity per acre?—A. Has been tried in small quantities, and is bound to be a leading article with our farmers.

Q. What other fibrous productions?—A. Good show for hemp and flax.

Q. What mineral productions?—A. None.

Q. What facilities for manufacture, water-power, convenient access to fuel, and its cost, cost of raw material for manufacture?—A. Three good streams for water-power; coal from Union Pacific Railroad, in Wyoming; wood on banks of stream; cost of former, \$8 per ton; latter, \$5 and \$6 per cord; wheat, 40 to 60 cents; corn, 35 to 50 cents; buckwheat, \$1 and \$1 50; barley, 50 and 75 cents; sugar beet, 25 and 30 cents, present price; can be raised in quantities at 10 cents.

Q. What commercial facilities, natural and artificial means of communication, character and amount of domestic and foreign commerce, with prospective expansion of local and general trade?—A. Commercial facilities good, by Union Pacific Railroad; artificial communication, Union Pacific Railroad; good roads; domestic trade only, and good and expanding yearly by 50 per cent.

Q. What is the total value, gold basis, of real estate and personal property?—A. Total value of real estate and personal property, \$3,000,000.

Q. What is the total value of raw material produced; total value added to raw material by manufacture?—A. Raw material produced, \$500,000; manufacture, \$75,000.

Q. What are the aggregate profits of capital employed in transportation, in merchandising, invested in loans to General or State Governments, and municipal corporations?—A. In transportation, Union Pacific Railroad; in merchandising, 20 per cent.; in municipal corporations, \$15,000.

Q. What is the aggregate amount paid in salaries and wages to professional men, clerks, messengers, conductors, brakemen, officers and sailors, &c.?—A. Clerks' wages per month, \$45; messengers', \$90; conductors', \$80; brakemen, \$70.

Q. What are the names of all towns and villages in your county, with the distance and direction from your county seat, and exact locality by section, township, and range?—A. Grand Island Station, county seat.

Pawnee Station.

Wood River Station.

Grand Island, sections 15 and 16, township 11 north, range 9 west.

Pawnee, west of county seat 8 miles, in sections 5 and 6, township 10 north, range 10 west.

Wood River, 18 miles west of county seat, in section 33, township 10 north, range 12 west.

JOHN WALLICHS.

JEFFERSON COUNTY.

North boundary, township line between township 4 and 5 north; east boundary range line between ranges 4 and 5 east, 6th principal meridian, and Otoe Reservation; south boundary, base line, and Otoe Reservation; west boundary, range line between ranges 4 and 5 west, 6th principal meridian.

Q. What is the number of acres under cultivation?—A. The number of acres under cultivation, as near as can be estimated, is 12,000 acres.

Q. What is the number of acres of each kind of crop?—A. Wheat, 5,000 acres; corn, 5,000 acres; oats, 1,200 acres; barley, 400 acres; potatoes and other crops, 400 acres.

Q. What is the average production of each crop per acre?—A. Wheat, 28 bushels; corn, 60 bushels; oats, 50 bushels; barley, 40 bushels; other crops, 300 bushels.

Q. What are the conditions of climate, soil, &c., suitable to each?—A. Climate, suitable for the production of all kinds of small grain and every other crop raised in the same latitude. Where good practical farming and deep plowing is done, there is no surer county for crops.

Q. What are the capacities for tea culture; whether any experiments have been made?—A. No experiments have as yet been made.

Q. What are the capacities for silk culture; whether any experiments have been made?—A. No experiments made; but mulberry grows well.

Q. What is the amount of wool produced, its value, and kind of sheep, &c.?—A. This climate is excellent for sheep; all that have been brought into the county do exceedingly well. The kinds are mixed; but all kinds improve from what they are when first brought to this county, and yield a good, healthy fleece. Not many as yet in the county. Cannot give any correct statement as to value of crop of wool.

Q. What is the amount of flax raised, cost, and quantity per acre?—A. No flax raised; presume it would do well, as everything else that has been planted does well.

Q. What other fibrous productions?—A. No fibrous productions raised.

Q. What mineral productions?—A. The county abounds in iron ore of the richest quality; immense deposits of the purest gypsum, or plaster of Paris, in inexhaustible quantities; and it is asserted that large deposits of stone coal abound in various localities, but as wood is plenty, no banks have been as yet successfully worked; but indications of coal crop out of the bank, in many places, of a good quality; water lime, in the bottom of the Little Blue, in immense quantities, with the finest qualities of build.

ing stone of the blue and magnesian limestone; also fine brown sandstone; potters' clay, of the finest and purest quality, for the manufacture of iron-stone china, near Marker's mill, on Rose Creek.

Q. What facilities for manufacture, water-power, convenient access to fuel, and its cost, cost of raw material for manufacture?—A. The Little Blue, which traverses the entire length of our county, 48 miles, affords facilities for manufacturing second to none west of the Missouri River, as it runs over a smooth and solid rock, with a fall of about 7 feet to the mile, affording plenty of water at all seasons of the year, for driving machinery of, at least, 1,000 horse-power; good hard wood, of easy access, worth \$3 and \$3 50 per cord, delivered; soft wood, \$2 50 per cord. Cost of raw material: This county is susceptible of producing the raw material for the manufacture of paper, woolen fabrics, iron, flour, and wooden wares at low estimates.

Q. What commercial facilities, natural and artificial means of communication, character and amount of domestic and foreign commerce, with prospective expansion of local and general trade?—A. Commercial facilities: We are very favorably located, as our county is destined soon to be penetrated by three railroads—the St. Joseph and Denver City, and Central Branch Union Pacific, leading through our county, east and west, and the Omaha and Southwestern, north and south. Commerce consists of general merchandising, buying and selling cattle, horses, hogs, and grain. The prospective expansion is glorious and bright, and exceeds any other portion of the frontier. "The star of empire" seems to rest over us.

Q. What is the total value, gold basis, of real estate and personal property?—A. Real and personal property, \$750,000.

Q. What is the total value of raw material produced; total value added to raw material by manufacture?—A. Value of raw material produced, \$220,000; total value added to raw material by manufacture, \$6,000.

Q. What are the aggregate profits of capital employed in transportation, in merchandising, invested in loans to General or State Governments and municipal corporations?—A. Aggregate profits of capital employed in transportation and merchandising, \$10,000.

Q. What is the aggregate amount paid in salaries and wages to professional men, clerks, messengers, conductors, brakemen, officers, and sailors, &c.?—A. Aggregate amount paid clerks and professional men, \$6,000.

Q. What are the names of all towns and villages in your county, with the distance and direction from your county seat, and exact locality by section, township, and range?—A. The names of the towns in the county are—

Jenkins's Mills, in section 19, township 1 north, range 4 east, of 6th principal meridian.

Fairburg, section 15, township 2 north, range 2 east, of 6th principal meridian.

Meridian, sections 18 and 19, township 3 north, range 1 east, of 6th principal meridian.

Hebron, section 6, township 2 north, range 2 west, of 6th principal meridian.

Kiawa, section 15, township 3 north, range 4 west, of 6th principal meridian.

County seat not yet located.

D. C. JENKINS.

JOHNSON COUNTY.

North boundary, line between townships 6 and 7 north; east boundary, center of range 12 east, 6th principal meridian; south boundary, line between townships 3 and 4 north; west boundary, guide meridian east.

Q. What is the number of acres under cultivation?—A. This county is 18 by 21 miles, and contains about 150,000 acres of deeded land; the balance is homesteads. About 50,000 acres under cultivation.

Q. What is the number of acres of each kind of crop?—A. Wheat, 25,000 acres; corn, 15,000 acres; oats, barley, potatoes, &c., 10,000 acres. These several amounts are estimated from the best information at my disposal.

Q. What is the average production of each crop per acre?—A. For the past twelve years Johnson County wheat crop has averaged 23 bushels per acre; corn, 50 bushels; oats, 40 bushels; potatoes, 200 bushels; white beans, 40 bushels; peas, 40 bushels; buckwheat, but little raised; Hungarian grass, 3 tons per acre; rye, 35 bushels; barley, 40 bushels.

Q. What are the conditions of climate, soil, &c., suitable to each?—A. Climate good; at times rather dry, but usually sufficient rain to make good crops. Soil is rather heavier than the river counties, and better adapted to wheat, but of such a diversified character that parts are adapted to all the staple productions of this western county.

Q. What are the capacities for tea culture; whether any experiments have been made?—A. No experiments have been made in this county in tea culture; consequently her capacities are not known.

Q. What are the capacities for silk culture; whether any experiments have been made?—A. No experiments have been tried in this county in silk culture; consequently no reports.

Q. What is the amount of wool produced, its value and kind of sheep?—A. There are but few sheep kept in this county; not half that was here five years ago. This county is well adapted to sheep, and I am at a loss to know why more are not kept; probably because the prices of cattle have ruled high for many years, and farmers have turned their attention to cattle and horses, and let sheep go. Johnson County is second to no other in this State for stock-raising. The immense pasturage along the Nemahas and their tributaries is where the drovers find the fat stock.

Q. What is the amount of flax raised, cost and quantity per acre?—A. There has never been any flax raised in Johnson County, but we have lands well adapted to its culture.

Q. What other fibrous productions?—A. No report.

Q. What mineral productions?—A. At Tecumseh, the county seat of Johnson County, we have coal mines in successful operation, where an amount sufficient to supply all demands is furnished at 20 to 25 cents per bushel. The quality is good, and the quantity is supposed to be inexhaustible. Building rock is found here in beds and ledges, easy of access and of good quality.

Q. What facilities for manufacture, water power, convenient access to fuel, and its cost; cost of raw material for manufacture?—A. Facilities for manufacturing are not easily found in this State. We have the Great Nemaha River, running through the center of the county, furnishing water-power in great abundance for mills of all kinds. There are already three excellent grist-mills on this stream inside the limits of our county, and room for a dozen more; also, we have the North Branch of the Little Nemaha, a lovely stream, clear as crystal, narrow but deep, and affording sufficient power for mills of any kind. These streams are belted with timber, principally hard wood.

Q. What commercial facilities, natural and artificial means of communication, character and amount of domestic and foreign commerce?—A. Our commercial facilities are very poor at present, but we expect two railroads to be constructed through this county within two years at least. The principal commodities for shipment to and from this county are, first, general merchandise, such as is sold in all agricultural regions, machinery of all kinds used by agriculturists, machinery for mills, &c. The exports are cattle, hogs, wheat, corn, oats, barley, potatoes, &c., and each of these classes at the rate of 30 per cent. yearly.

Q. What is the total value, gold basis, of real estate and personal property?—A. From the best information at hand we would consider \$2,000,000 a very fair estimate.

Q. What is the total value of raw material produced, total value added to raw material by manufacture?—A. Manufacturing is in its infancy, but can safely put it down at \$50,000 per annum.

Q. What are the aggregate profits of capital employed in transportation, merchandising, invested in loans to General or State Governments and municipal corporations?—A. On capital employed in various ways can be safely estimated at 30 per cent. per annum.

Q. What is the aggregate amount paid in salaries and wages to professional men, clerks, messengers, conductors, brakemen, officers, sailors, &c.—A. Average amount paid in salaries to professional men and others, \$2,000 per annum.

Q. What are the names of all towns and villages in your county, with the distance and direction from your county seat, and exact locality by section, township, and range?—A. Tecumseh, our county seat, is situated on section 28, township 5, range 11 east.

Vesta is situated on section 31, township 5, range 10.

Sterling is situated on section 26, township 6, range 9.

Helena is situated on section 7, township 6, range 11.

Helena is 10 miles north and 1 mile west of Tecumseh.

Vesta is 7 miles west and half a mile south of county seat.

Sterling is 12 miles northwest of county seat.

C. WOODLEY,
County Clerk.

KEARNY COUNTY.

North boundary, Platte River and Fort Kearny military reservation; east boundary, line between ranges 11 and 12; south boundary, line between townships 4 and 5 north; west boundary, second guide meridian west.

Q. What is the number of acres under cultivation?—A. The acreage under cultivation is at the present time not over 100 acres. Settlers have not come in the county yet. Those who have planted are the old residents, who formerly lived by ranching, &c., and the gardens planted by the troops at Fort Kearney.

Q. What is the number of acres of each kind of crop?—A. No estimate has been made of the average of various crops; but from inquiries made and from my own observations, I judge that corn will average 50 bushels; wheat, 40; oats, 60; potatoes, 200. Of vegetables I raised last year, on common prairie soil, beets weighing 7 pounds; cauliflowers, 11 pounds; carrots, 2 feet long and 4 inches thick at the thickest end, and tomatoes, squashes, turnips, parsnips, cabbage, onions, &c., of a very large size and fine quality. My young trees are doing well, such as cottonwood, ash, elm, cedar, larch, walnut, hickory, pine, fir, spruce, locust, maple, and others. Peaches, apples, pears, grapes, blackberries, strawberries, are all doing finely, but not old enough to show products yet.

Q. What is the average production of each crop per acre?—A. Answered in question No. 2.

Q. What are the conditions of climate, soil, &c., suitable to each?—A. The climate is in every way favorable to the various grains, vegetables, fruits, &c., raised here. The average seasons are sufficiently moist for all purposes of agriculture and horticulture. The soil excellent; it is a light, friable, sandy loam, just sufficiently clayey to bake a little on top in dry weather, and keep the moisture from evaporating too freely. The soil stands drought well. Some seasons we have had considerable dry weather, but the hay crop and small grain crop here never failed. It is very rare that we have extraordinarily dry weather. I have lived here fourteen years, and am perfectly satisfied with soil and climate.

Q. What are the capacities for tea culture; whether any experiments have been made?—A. No experiments have been made in tea culture; but I think the soil and climate quite favorable for it. We do not intend to send to China and Japan for tea when we can raise it at a small cost in Nebraska. We can get the Chinese here tolerably cheap to do the work, if we cannot get other labor for the work. But many farmers will have their own tea patches, and Chinamen can cut wood or do something else.

Q. What are the capacities for silk culture; whether any experiments have been made?—A. No experiments have been made in silk culture. Believe the mulberry will grow finely here; but do not know what effect the winter would have on the silkworms. Am inclined to think silk culture could be successfully carried on. The subject only wants experiment and application.

Q. What is the amount of wool produced, its value, and kind of sheep, &c.?—A. No wool produced yet. There are a few lambs in the county at present for soldiers' Fourth of July dinners, and that is all. The best grazing for them in the world. There is just as much chance for 6,000,000 sheep to graze in Kearney County as there is for the six individual lambs that at present run around Fort Kearney. The Platte Valley affords excellent facilities for wool-producing.

Q. What is the amount of flax raised, cost and quantity per acre?—A. No flax raised here at present. Wild flax grows on the islands of the Platte, and the soil of Kearney County is undoubtedly in every way favorable to its profitable cultivation. All we need is flax planters and the manufacturers. The land lies idle, awaiting the busy hand of man to bring forth millions of dollars' worth of wealth for the people.

Q. What other fibrous productions?—A. The common hemp grows wild here, and would pay for cultivation; but none is cultivated.

Q. What mineral productions?—A. No minerals have yet been developed in Kearney County; but coal, stone, and other minerals are believed to abound in the south and west parts of Kearney County, on the Republican River. We have a marly clay here, that mostly underlies the surface soil, that is excellent for building purposes.

Q. What facilities for manufacture, water-power, convenient access to fuel, and its cost; cost of raw material for manufacture?—A. What the profitable facilities are for manufacture I could not say at present; time and future developments will show that. I believe the water of the Platte could be made serviceable for mills, and also the waters of the Republican and its tributaries. Coal at present can be delivered at Fort Kearney for \$15 per ton; at Kearney Station, Union Pacific Railroad, for about \$9 per ton. Wood is about \$7 per cord at Kearney Station; at Fort Kearney, \$11. Wood can be cut on the islands of the Platte, off the military reservation, and on the streams between the Platte and Republican Rivers.

Q. What commercial facilities, natural and artificial means of communication, and amount of foreign and domestic commerce, with the prospective expansion of local and

general trade?—A. Commercial facilities are very favorable. Fort Kearney receives daily mail from the east and west, and supplied also by the Union Pacific Railroad Company's Express. Freight is supplied by the Union Pacific Railroad. Early in 1871 other facilities will be afforded by the completion of the Burlington and Missouri Railroad and the St. Joseph and Denver Railroad to Fort Kearney. As soon as the national capital is located at Kearney, will make the Platte River navigable for improved boats, and run a canal from Kearney to headwaters of Little Blue, thereby giving excellent facilities. Prospective expansion of general and local trade is great. Expect to have a city of a million people on the Fort Kearney military reservation within ten years from the sitting of the first Congress. Much of the Ten-mile City's trade will be with Plattsmouth, as will also the trade of the numerous settlements and cities that will spring up around. The removal of the national capital to the Fort Kearney military reservation would be the great impetus to start this wilderness of productive plains into life and activity, and put wealth into the hands of the business men of Plattsmouth, and be a blessing to the republic at large. The prospective expansion is truly great.

Q. What is the total value, gold basis, of real estate and personal property?—A. Kearney County is not of much gold value at present. Real estate and personal property, exclusive of Government property, would perhaps amount to about \$20000.

Q. What are the total values of raw material produced, total values added to raw material by manufacture?—A. Not estimated.

Q. What are the aggregate profits of capital employed in transportation, in merchandising, invested in loans to General and State Governments and municipal corporations?—A. Not estimated; very small.

Q. What is the aggregate amount paid in salaries and wages to professional men, clerks, messengers, conductors, brakemen, officers, sailors, &c.?—A. Not estimated; but a small amount.

Q. What are the names of all towns and villages in your county, with the distance and direction from your county seat, and exact locality by section, township, and range?—A. Fort Kearney, on military reservation. Kearney City has lost its title, and is in hands of squatters. As soon as the Burlington and Missouri Railroad brings us people to settle, we will soon have towns. At present, in fact, we have none.

M. H. SYDENHAM.

LINCOLN COUNTY.

North boundary, south bank of North Platte and middle of main channel of main Platte River; east boundary, second guide meridian west; south boundary, base line; west boundary, from point on base line three miles west of corner to ranges 25 and 26 on base line north, to south bank of North Platte River.

Q. What is the number of acres under cultivation?—A. One thousand acres under cultivation. We have not previous to this year, owing to the Indian troubles, felt justified in scattering out on to farms. Our land was not townshipped until late last fall, and it is not yet fully subdivided, and none could tell previous to the survey whether they were settling on United States or railroad lands; but the lands are now being taken up rapidly.

Q. What is the number of acres of each kind of crop?—A. Six hundred acres of oats, 100 of barley, 300 of corn, vegetables, and gardens.

Q. What is the average production of each crop per acre?—A. Previous years only oats, 60 bushels to the acre.

Q. What are the conditions of climate, soil, &c., suitable to each?—A. None especially adapted to cereals and vegetables. Corn does about as well as in Northern Pennsylvania. Soil a rich loam, with clay subsoil and some little sand blown from the bed of the Platte River. We are, toward fall, or from the 1st of August, affected by dry weather, yet there is an area, of 60 miles by about 7 miles, of Platte Valley plain that can be irrigated from the Platte at an expense of less than \$10 for every 160 acres, as we have previously actual experiments.

Q. What are the capacities for tea culture; whether any experiments have been made?—A. The bluffs on either side of the Platte bottom, or plain, rise from 200 to 300 feet, and are cut up into cañons, and are composed of a fine clay, without a particle of sand and but little water, and produces splendid grass and much cedar, ash, box elder, and other timbers, and they are thought by some to resemble much the bluffs that the finer teas are grown on in China. I think they are well adapted to grape culture, as they grow wild in abundance. No experiments have been made in tea culture.

Q. What are the capacities for silk culture; whether any experiments have been made?—A. No experiments have been made with the mulberry, though cottonwood grows splendidly when protected from fires.

Q. What is the amount of wool produced, its value, and kind of sheep, &c.?—A. Guy

C. Barton has seven Cashmere goats, doing finely. There are probably 300 common Middle State sheep, and probably 5,000 Mexican sheep, in the county.

Q. What is the amount of flax raised, cost and quantity per acre?—A. None raised.

Q. What other fibrous productions?—A. None raised.

Q. What mineral productions?—A. None known.

Q. What facilities for manufacture, water-power, convenient access to fuel, and its cost, cost of raw material for manufacture?—A. Cost of fuel, from \$2 to \$8. No water privileges. No material for manufacture excepting wool, and cost regulated by eastern markets, deducting freight.

Q. What commercial facilities, natural and artificial means of communication; character and amount of foreign and domestic commerce, with the prospective expansion of local and general trade?—A. Union Pacific Railroad runs through the county, and we expect to be supplied with the Burlington and Missouri. There are usually about 800 troops in the county, who are supplied from eastern markets, and a population of about 1,500; railroad men, farmers, and stock-raisers, have been supplied heretofore with everything that a wide-awake American needs for a living.

Q. What is the total value, gold basis, of real estate and personal property?—A. The Union Pacific Railroad Company have heretofore been assessed at about \$4,000,000, and citizens at \$2,000,000, consisting, the latter in about \$150,000 buildings and the balance personalty. And there is about \$1,860,000 worth of land, principally not under cultivation.

Q. What are the total values of raw material produced, total value added to raw material by manufacture?—A. Crops, \$10,000; beef, \$75,000.

Q. What are the aggregate profits of capital employed in transportation, in merchandising, invested in loans to General and State Governments and municipal corporations?—A. Transportation, if a correct return was made by Union Pacific Railroad Company, about 50 per cent.; merchandise, 50 per cent.; none in loans.

Q. What is the aggregate amount paid in salaries and wages to professional men, clerks, messengers, conductors, brakemen, officers, sailors, &c.?—A. Professional men, \$20,000; clerks, \$15,000; messengers, \$4,000; conductors, \$15,000; brakemen, engineers, and firemen, \$30,000; officers, \$10,000.

Q. What are the names of all towns and villages in your county, with the distance and direction from your county seat, and exact locality by section, township and range?—A. Cottonwood Springs, 18 miles east from North Platte, the county seat.

North Platte, county seat and terminus of first grand division of the Union Pacific Railroad. Also, Fort McPherson, a six-company post, at Cottonwood Springs.

Our county is not fully subdivided.

B. I. HINMAN.

L'EAU QUI COURT COUNTY.

North boundary, Missouri and Niobrara Rivers; east boundary, range line between ranges 1 and 2 west, 6th principal meridian; south boundary, township line between townships 28 and 29 north; west boundary, range line between ranges 8 and 9 west, 6th principal meridian.

Q. What is the number of acres under cultivation?—A. Eight hundred acres under cultivation.

Q. What is the number of acres of each kind of crop?—A. Potatoes, 25 acres; beets, 5 acres; rutabagas, 10 acres; peas, 20 acres; oats, 100 acres; barley, 10 acres; orchards, 5 acres; wheat, 400 acres; corn, 225 acres.

Q. What is the average production of each crop per acre?—A. Wheat, 33½ bushels; barley, 40 bushels; oats, 60 bushels; peas, 22 bushels; corn, 20 bushels; beets, average weight 15 pounds each; rutabagas, very fine.

Q. What are the conditions of climate, soil, &c., suitable to each?—A. Climate salubrious; well adapted to wheat and all other cereals.

Q. What are the capacities for tea culture; whether any experiments have been made?—(No answer returned.)

Q. What are the capacities for silk culture; whether any experiments have been made?—(No answer returned.)

Q. What is the amount of wool produced, its value, and kind of sheep?—A. Quantity small; quality extra; mixed.

Q. What is the amount of flax raised, cost and quantity per acre?—(No answer.)

Q. What other fibrous productions?—(No answer.)

Q. What mineral productions?—(No answer.)

Q. What facilities for manufacture, water-power, convenient access to fuel, and its cost; cost of raw material for manufacture?—A. Verdigris Creek; splendid water privilege; timber convenient; coal in small quantities. Bazel Creek; good water-power; good land—prairie, \$4 per acre; timber, \$6 per acre.

Q. What commercial facilities, natural and artificial means of communication, character and amount of domestic and foreign commerce?—A. Missouri River.

Q. What is the total value, gold basis, of real estate and personal property?—(No answer.)

Q. What is the total value of raw material produced, total value added to raw material by manufacture?—(No answer.)

Q. What are the aggregate profits of capital employed in transportation, merchandising, invested in loans to General or State Governments and municipal corporations?—(No answer.)

Q. What is the aggregate amount paid in salaries and wages to professional men, clerks, messengers, conductors, brakemen, officers and sailors?—A. Carpenters, \$3; masons, \$3 per day.

Q. What are the names of all towns and villages in your county, with the distance and direction from your county seat, and exact locality by section, township, and range?—A. Niobrara, county seat; located on lots one and two, and the southeast $\frac{1}{4}$ of section 10, and the north $\frac{1}{2}$ of northeast $\frac{1}{4}$ section 15, all in township 32 north, range 6 west, 6th principal meridian.

HENRY STURGESS,
County Clerk.

MADISON COUNTY.

North boundary, line between townships 24 and 25; east boundary, 6th principal meridian; south boundary, line between townships 20 and 21; west boundary, line between ranges 4 and 5 west.

Q. What is the number of acres under cultivation?—A. There are about 15,000 acres in the county that might be considered in cultivation, but a good portion of that has only been broken up the present season, and has not been planted in anything but sod corn, which looks well for the time of year, and will, if seasonable, make from 20 to 30 bushels per acre.

Q. What is the number of acres of each kind of crop?—A. There are about 5,000 acres of wheat, 2,000 of oats, 1,500 of old ground corn, 200 of barley, 100 of rye, 100 of potatoes, and about 100 of sorghum, turnips, and other small vegetables. And of the new land broken up the present season, there are about 4,000 acres in sod corn, and about 3,000 not planted in anything.

Q. What is the average production of each crop per acre?—A. Wheat will average from 25 to 30 bushels per acre; oats, from 50 to 75; corn, well cultivated, from 40 to 50; potatoes, from 150 to 200; barley, from 50 to 75; rye, from 15 to 20; sod corn, from 10 to 40. Sorghum grows and yields exceedingly well, but I can form but a poor idea of the amount that might be raised to the acre. The world can't beat us for turnips, beets, carrots, and parsnips.

Q. What are the conditions of climate, soil, &c., suitable to each?—A. The climate is very mild, except an occasional snow-storm in winter; generally about rain enough in the spring and summer to make the crops grow well. Better adapted to the raising of wheat, oats, barley, and potatoes, and all other root crops, than anything else. Corn and rye are considered the most uncertain crop of anything that has been tried in the county.

Q. What are the capacities for tea culture; whether any experiments have been made?—A. There have been no experiments in tea-raising tried in this county; cannot tell how it would grow, but think it might do well.

Q. What are the capacities for silk culture; whether any experiments have been made?—A. There have been no experiments tried in silk culture; can see no reason why it might not be made a success.

A. What is the amount of wool produced, value, kind of sheep, &c.?—A. There have been no sheep introduced in the county, except the common domestic sheep. Almost every farmer has a few. Wool-growing has not been tried as a business, but sheep do very well here; will live on the wild grass winter as well as summer, and can't be beat in the United States for producing wool.

Q. What is the amount of flax raised, cost, and quantity per acre?—A. Flax-raising has not been tried, except in very small quantities; can't find out anything very accurate in regard to the cost of tillage and quantity produced per acre; but what little I have seen growing looks well, and I am satisfied that it will do well here if given a fair trial.

Q. What other fibrous productions?—A. There has been very little experimenting in any other fibrous production except those already enumerated; think almost any fibrous production adapted to a northern climate will do well here.

Q. What mineral productions?—A. No experiments have been tried yet, and nothing of any kind of mineral yet found to exist.

Q. What are the facilities for manufacture, water-power, convenient access to fuel

and its cost, cost of raw material for manufacture?—A. The water-power is very good in this county. The Elkhorn River runs through the entire length of the county from west to east, and will admit of a dam every three miles, and will afford water sufficient to run all the machinery that can be attached. The North Fork runs 9 miles through the county, and has one large flouring and saw mill on it and will admit of two more. Battle Creek runs about 15 miles through the county and will furnish a good site for about two mills. Union Creek runs about 20 miles through the county, and is susceptible of about three or four dams, and large enough to run any kind of machinery. Plenty of timber; wood is worth about \$2 per cord in the rick.

Q. What are the commercial facilities, natural and artificial means of communication, character and amount of domestic and foreign commerce, with the prospective expansion of local and general trade?—A. Commercial facilities, both natural and artificial, are at present very poor. At present there is little business being done, except farming. There are but two stores in the county, and they have to draw their goods with teams a distance of 45 miles. The prospects for a railroad from Fremont up the Elkhorn Valley, via the Niobrara, up the Missouri Valley are very flattering; also some hope of another from Sioux City, Iowa, to Columbus, Nebraska. Prospective expansion of local trade very good. Better times in the future hoped for.

Q. What is the total value, gold basis, of real estate and personal property?—A. The personal and real property was assessed last spring at about its true value in gold, and amounted then to \$143,300; but from the best information I can get now, \$300,000 will be about the actual total value of all the property in the county on a gold basis.

Q. What is the total value of raw material produced, total value added to raw material by manufacture?—A. There is no raw material produced for manufacture in the county, and no manufactories in the county to add to the value of any raw material that might be raised.

Q. What are the aggregate profits of capital employed in transportation, in merchandising, invested in loans to General or State Governments, and municipal corporations?—A. There is no capital employed in transportation. There are about \$10,000 invested in merchandise, and from the way goods are sold here and elsewhere, the aggregate profits must be about 40 per cent. There is nothing invested in General or State Government loans or to municipal corporations.

Q. What is the aggregate amount paid in salaries and wages to professional men, clerks, messengers, conductors, brakemen, officers, and sailors, &c.?—A. The aggregate amount of money paid in salaries and wages to professional men, clerks, officers, &c., is about \$1,000 a year.

Q. What are the names of all towns and villages in your county, with the distance and direction from your county seat, and exact locality by section, township, and range?—A. The name of our county seat is Norfolk, situated in the southeast quarter of section 22, in township 24 north of range 1 west of the 6th principal meridian.

Madison is another town just a little more than 14 miles distant from the county seat in a southerly direction, located on section 32, in township 22 north of range 1 west.

No other towns or villages in the county; each of the two have a post office and a weekly mail to each, with orders for that to Norfolk to be doubled from the 1st of July.

S. H. THATCHER,
County Clerk.

OTOE COUNTY.

North boundary, line between townships 9 and 10 north; east boundary, Missouri River; south boundary, line between townships 6 and 7 north; west boundary, guide meridian east.

Q. What is the number of acres under cultivation?—A. We have about 12,000 acres under cultivation.

Q. What is the number of acres of each kind of crop?—A. About 5,000 acres in corn, 3,000 in wheat, 1,500 in oats, 1,500 in barley and rye, and 1,000 in other crops.

Q. What is the average production of each crop per acre?—A. Corn, about 40 bushels per acre; wheat, 20; oats, 35; barley, 30; rye, 25; potatoes, 300.

Q. What are the conditions of climate, soil, &c., suitable to each?—A. The climate is well adapted to the production of such grains as are mentioned in No. 3, and seems especially favorable to producing all kinds of vegetables known to this latitude. The soil is deep and rich, no manuring of any kind being necessary.

Q. What are the capacities for tea culture; whether any experiments have been made?—A. It is argued by those who have experimented elsewhere, and examined our soil, that tea can be successfully cultivated, but no experiments have been made.

Q. What are the capacities for silk culture; whether any experiments have been made?—A. No experiments have been made in silk culture. The mulberry grows spontaneously, and the worm can no doubt be raised very successfully, but the country has not advanced sufficiently to engage in such pursuits.

Q. What is the amount of wool produced, its value, kind of sheep, &c.?—A. About 100,000 pounds are produced annually; principally of the Merino sheep. The soil, climate, and every natural surrounding are favorable to wool-growing. Some diseases are known among sheep, but less than in most of the States. Old sheep-raisers from other and older States regard this as preëminently a wool-growing country.

Q. What is the amount of flax raised, cost, and quantity per acre?—A. Little flax is produced, and but few experiments have been tried.

Q. What other fibrous productions?—(No answer.)

Q. What mineral productions?—A. Coal in small quantities has been discovered.

Q. What facilities for manufacture, water-power, convenient access to fuel, and its cost, cost of raw material for manufacture?—A. Fuel for manufacturing is necessarily brought from other States. We have good water-power for flouring-mills and similar purposes. Cost of raw material would be wholly speculative.

Q. What commercial facilities, natural and artificial means of communication, character and amount of foreign and domestic commerce, with the prospective expansion of local and general trade?—A. We have a practical terminus of four railroads to the north, south, and east; a railroad in course of construction to the west, 10 miles completed, and others in contemplation. The Missouri River washes our entire eastern border, and is navigated by a large class of steamboats. No figures can be conveniently obtained as to amount.

Q. What is the total value, gold basis, of real estate and personal property?—A. Assessed valuation nearly \$5,000,000; actual value in gold not less than \$6,000,000.

Q. What is the total value of raw material produced, total values added to raw material by manufacture?—A. No figures.

Q. What are the aggregate profits of capital employed in transportation, in merchandising; invested in loans to General or State Governments and municipal corporations?—A. No figures attainable.

Q. What is the aggregate amount paid in salaries and wages to professional men, clerks, messengers, conductors, brakemen, officers, and sailors, &c.?—A. Cannot approximate it.

Q. What are the names of all towns and villages in your county, with the distance and direction from your county seat, and exact locality by section, township, and range?—A. No towns of importance in the county, except the county seat, Nebraska City.

W. H. H. WATERS.

PAWNEE COUNTY.

North boundary, township line between townships 3 and 4 north; east boundary, range line between ranges 12 and 13 east, 6th principal meridian; south boundary, base line; west boundary, guide meridian east.

Q. What is the number of acres under cultivation?—A. About 50,000 acres.

Q. What is the number of acres of each kind of crop?—A. Wheat, 15,000 acres; corn, 15,000 acres; oats and other small grain, 10,000 acres; and 10,000 acres of potatoes, orchard grass, sorghum, &c.

Q. What is the average production of each crop per acre?—A. Wheat, 20 bushels; corn, 45 bushels; oats, 65 bushels; buckwheat, 18 bushels; grass, 3 tons; potatoes, 75 bushels; sorghum, 100 gallons.

Q. What are the conditions of climate, soil, &c., suitable to each?—A. Climate, moderate; spring, inclined to wet weather, not, however, to the inconvenience of the farmer; fall, rather more dry—the most agreeable and beautiful weather imaginable; winter, moderate, about four months in duration. Winter wheat does splendidly; in fact the climate and soil (which is rich black loam, with a slight admixture of sand) are admirably adapted to all the foregoing grains and vegetables, as well as most kinds of fruits common to the temperate zone, such as apples, peaches, grapes, strawberries, &c.

Q. What are the capacities for tea culture; whether any experiments have been made?—A. No experiments have been made. I cannot see, however, why, considering soil, climate, &c., it may not produce this article to a satisfactory result.

Q. What are the capacities for silk culture; whether any experiments have been made?—A. No experiments have been made.

Q. What is the amount of wool produced, its value, and kind of sheep?—A. Though the experiments have not been extensive, the results have been satisfactory. I have no means at hand of arriving at any definite amount produced. Other more lucrative employments have crowded this pursuit back. At present it holds no very prominent place among the vocations of our citizens. Both fine and coarse wool have been tried with profit.

Q. What is the amount of flax raised, cost and quantity per acre?—A. But few experiments have been made in flax or other fibrous productions.

Q. What other fibrous productions?—(No answer returned.)

Q. What mineral productions?—A. No mineral resources have as yet been developed, except stone coal, which is found in such quantities, in veins near the surface, as to supply the demand for 100 miles distant.

Q. What facilities for manufacture, water-power, convenient access to fuel and its cost, cost of raw material for manufacture?—A. Facilities for manufacturing are excellent; water-power in abundance; fuel cheap and convenient of access.

Q. What commercial facilities, natural and artificial means of communication, character and amount of domestic and foreign commerce?—A. Our commercial facilities will soon be greatly enhanced by the completion of the Burlington and Southwestern Railway to Pawnee City, which will be accomplished before the 1st of August, 1871; and with a road from St. Joseph, Missouri, to Lincoln, Nebraska, running by Pawnee City, which is already projected, the prospect for the general expansion of general and local trade is very flattering.

Q. What is the total value, gold basis, of real estate and personal property?—A. Total value, gold basis, of real estate and personal property in Pawnee County is \$1,000,000.

Q. What is the total value of raw material produced, total value added to raw material by manufacture?—A. Total value of raw material produced, \$100,000.

Q. What are the aggregate profits of capital employed in transportation, merchandising, invested in loans to General or State Governments and municipal corporations?—A. Value of capital employed in the various branches of business is \$110,000.

Q. What is the aggregate amount paid in salaries and wages to professional men, clerks, messengers, conductors, brakemen, officers, and sailors?—A. Paid for salaries, \$25,000.

Q. What are the names of all towns and villages in your county, with the distance and direction from your county seat, and exact locality by section, township, and range?—A. Pawnee City, county seat; besides this we have no other town in the county.

J. L. EDWARDS.

PLATTE COUNTY.

North boundary, line between townships 20 and 21 north; east boundary, line between ranges 1 and 2 east, 6th principal meridian; south boundary, Platte River, line between townships 16 and 17 north, and Pawnee reservation; west boundary, Pawnee reservation and line between ranges 4 and 5 west, 6th principal meridian.

Q. What is the number of acres under cultivation?—A. There are 60,594.

Q. What is the number of acres of each kind of crop?—A. Fourteen thousand in wheat, 15,000 in oats, 18,000 in corn, 400 in barley, 100 in rye, 50 in buckwheat, 800 in potatoes, 50 in beans, 12,000 in trees, 100 in fruit trees, 20 in melons, 20 in small fruits, 50 in peas, 2 in flax, 2 in hemp.

Q. What is the average production of each crop per acre?—A. Wheat, per acre, 20 bushels; oats, 36; corn, 40; barley, 10; rye, 25; buckwheat, 10; potatoes, 150; beans, 20; peas, 10.

Q. What is the condition of climate, soil, &c., suitable to each?—A. Cool in winter, but everything to be desired in or during the cropping season, with a tendency to drought during April and May; ordinarily, rain sufficient in June favorable to the growth of cereals.

Q. What are the capacities for tea culture; whether any experiments have been made?—A. Don't know.

Q. What are the capacities for silk culture; whether any experiments have been made?—A. Do not know.

Q. What is the amount of wool produced, its value, and kind of sheep, &c.?—A. But few sheep here, and they of the common herd do well.

Q. What is the amount of flax raised, cost, and quantity per acre?—A. The first I ever saw or knew of this year, it looks well—fine stock; of the cost I cannot at this time speak advisedly.

Q. What other fibrous productions?—A. Hemp, but little; it is as yet an experiment.

Q. What mineral productions?—A. None known.

Q. What facilities for manufacture, water-power, convenient access to fuel and its cost, cost of raw material for manufacture?—A. Are good. The Loup Fork of the Platte has power sufficient to run a million spindles, ten thousand looms, and five hundred burrs. In short, the power is here to spin and weave for the world, and to make bread for the million. Ready access to mountains of coal. Cost of water-power is \$100,000. Coal, \$10 per ton. For flour, as cheap as at any point in the United States. For other things, such as woolen goods, as cheap, I think, as anywhere else.

Q. What commercial facilities, natural and artificial means of communication, char

acter and amount of domestic and foreign commerce, with the prospective expansion of local and general trade?—A. Good. Union Pacific Railroad, and prospects good for others. Agricultural products. The prospective expansion of local and general trade is excellent, based on the fact that we are the center of a great agricultural district, with no other natural or artificial means of communication.

Q. What is the total value, gold basis, of real estate and personal property?—A. \$1,159,498 45.

Q. What are the total values of raw material produced, total value added to raw material by manufacture?—A. Nothing to base estimate upon.

Q. What are the aggregate profits of capital employed in transportation, in merchandising, invested in loans to General and State Governments and municipal corporations?—A. No data.

Q. What is the aggregate amount paid in salaries and wages to professional men, clerks, messengers, conductors, brakemen, officers, and sailors, &c.?—A. Don't know.

Q. What are the names of all towns and villages in your county, with distance and direction from your county seat, and exact locality by section, township, and range?—A. Columbus, county seat, is located on sections 19, 29, and 30, township 17 north, range 1 east, 6th principal meridian.

Monroe, west by north, 12 miles from county seat.

Jackson, west by south, 8 miles from county seat.

H. J. HUDSON,
County Clerk.

RICHARDSON COUNTY.

North boundary, line between townships 3 and 4 north; east boundary, Missouri River; south boundary, base line; west boundary, line between ranges 12 and 13 east.

Q. What is the number of acres under cultivation?—A. Total acreage, 285,000.

Q. What is the number of acres of each kind of crop?—A. Of corn, 50,000 acres; wheat, 30,000; oats, 25,000; rye, barley, and buckwheat, 20,000; potatoes, sorghum, broom-corn, &c., 5,000; balance in pasture, miscellaneous, &c.

Q. What is the average production of each crop per acre?—A. Corn, 55 bushels per acre; wheat, spring and fall, 19; oats, 50; potatoes, 150; buckwheat, 30, little raised; rye, 22; barley, 22; timothy hay, 4 tons; clover, 5; Hungarian and millet, 5; castor beans, no data; broom-corn, no data; hemp and flax, no data.

Q. What are the conditions of climate, soil, &c., suitable to each?—A. The climate and soil are in every way favorable to the growth of all crops mentioned in schedule 3. They are staple crops, grown regularly every year, and none has ever failed to yield an abundant harvest since the drought of 1860, excepting, however, the ravages of the grasshoppers.

Q. What are the capacities for tea culture; whether any experiments have been made; and same of silk culture?—A. No experiments.

Q. What is the amount of wool produced, its value, and kind of sheep, &c.?—A. In 1870, 30,000 pounds, worth 35 cts. Southdowns, Leicester, (pure and crossed,) Saxony, $\frac{1}{2}$ and $\frac{1}{4}$ Spanish merinos.

Q. What is the amount of flax raised, cost and quantity per acre?—A. Grows well; but little raised on account of scarcity of laborers and lack of machinery.

Q. What other fibrous productions?—A. Flax grows well; little raised. Cotton has been tried, but without much success.

Q. What mineral productions?—A. Coal has been developed in veins of from four to sixteen inches in various portions of the county. A company, with abundant capital, is now at work about five miles southeast of Rulo. Marl and a very pure quality of limestone are found in abundance. There is much to indicate the existence of lead ore. Sulphuret of iron abounds.

Q. What facilities for manufacture, water-power, convenient access to fuel and its cost, cost of raw material for manufacture?—A. The county will offer rare inducements to manufacturers with the gradual settlement of the country on either side. The Great Nemaha, its North and South Forks, the Muddy and Four-mile Creeks, afford no less than thirty or forty first-class seats for mills or other machinery, which may be used with water-power. Probably no single county in the Middle or Western States is so abundantly provided for in this respect. The abundance of timber enables several steam-mills to compete with water-mills even now, and the cost of fuel will be lessened within a year, when the Burlington and Southwestern Railway will open to us the extensive lumber and coal fields of Missouri.

Q. What commercial facilities, natural and artificial means of communication, character and amount of domestic and foreign commerce, with the prospective expansion of local and general trade?—A. The commercial facilities are unsurpassed, considering the length of time the county has been settled. The Missouri River washes the entire

eastern boundary, giving us six very fine landings. This county has been the general outlet for the country up the Nemaha Valley, and as far as the Blue, for a few years. Rulo is the principal shipping point. Over 250,000 bushels of corn were shipped in 1870. The average annual shipments of wheat and corn from that point are about \$75,000. About eighteen miles of the Nebraska Division of the Burlington and Southwestern Railway have been completed west from Rulo. Ten miles will be built east from the same place by October, 1870, giving Southern Nebraska a rail connection with the Chicago, Burlington and St. Joseph Railroad, the Burlington and Missouri Road, the Hannibal and St. Joseph Road, &c. While it is confidently expected to have direct southern connection with St. Louis, via the Atlantic and Northwestern Road, by November 1870.

Q. What is the total value, gold basis, of real estate and personal property?—A. Total value of real estate and personal property, \$2,552,368.

Q. What are the total values of raw material produced, total value added to raw material by manufacture?—(No answer.)

Q. What are the aggregate profits of capital employed in transportation, in merchandising, invested in loans to General or State Governments and municipal corporations? (No answer.)

Q. What are the aggregate amounts paid in salaries and wages to professional men, clerks, messengers, conductors, brakemen, officers, and sailors, &c.?—(No answer.)

Q. What are the names of all towns and villages in your county, with the distance and direction from your county seat, and exact locality by section, township, and range?—A. Falls City, county seat, located on sections 10 and 15, township 1, range 16. Population, 600.

Rulo, 10 miles east from county seat, located on sections 17 and 18, township 1, range 18.

Salem, 8 miles west from county seat, located on sections 3 and 4, township 1, range 15.

Arago, 12 miles northeast from county seat, located on sections 1, 11 and 12, township 2, range 17, and section 7, township 2, range 18. Population, 550.

S. W. BROOKE.

RICHARDSON COUNTY.

North boundary, line between townships 3 and 4 north; east boundary, Missouri River; south boundary, base line; west boundary, line between ranges 12 and 13 east; 6th principal meridian.

Q. What is the number of acres under cultivation?—A. There are about 45,000 acres.

Q. What is the number of acres of each kind of crop?—A. Twenty-five thousand acres in corn, 15,000 in wheat, both spring and winter. Winter wheat is fast becoming the favorite crop, and does finely; 5,000 acres in barley, rye, oats, potatoes, &c.

Q. What is the annual production of each crop per acre?—A. Corn, 50 bushels; winter wheat, 25; spring wheat, 20; barley, 20; potatoes, 250; oats, 45.

Q. What are the conditions of climate, soil, &c., suitable to each?—A. Is on the fortieth parallel of latitude; east part of the county best adapted to corn; west part to small grain. Every alternate year is wet and dry; yet the drought does not generally commence until after wheat and other small grain have advanced far enough to be out of danger. Soil is of the best quality—deep loam. Surface of country, rolling.

Q. What are the capacities for tea culture; whether any experiments have been made?—A. No experiments have been made.

Q. What are the capacities for silk culture; whether any experiments have been made?—A. No experiments have been made.

Q. What is the amount of wool produced, its value, kind of sheep, &c.?—A. About 4,000; about 20,000 pounds; quality is second class. Native, but being improved, rapidly, by introduction of merinos.

Q. What is the amount of flax raised, cost, and quantity per acre?—A. None yet grown here, though climate and soil undoubtedly favorable.

Q. What other fibrous productions?—A. No fibrous productions raised. A few years since much hemp was raised here and succeeded admirably.

Q. What mineral productions?—A. No minerals of any importance have yet been discovered, except coal. Many surface veins of from 12 to 30 inches exist, and considerable is mined for local use. Geologists tell us that heavy veins lie deep.

Q. What facilities for manufacture, water-power, convenient access to fuel and its cost, cost of raw material for manufacture?—A. Water-power is good. Many mill-sites upon the Nemaha, Muddy and other tributaries; no material of any account accessible. The Missouri, Nemaha, and Muddy have plenty of good timber upon their borders; cord-wood worth \$4 per cord.

Q. What commercial facilities, natural and artificial means of communication, character and amount of domestic and foreign commerce, with the prospective expansion of local and general trade?—A. Missouri River upon the east border; the Burlington

and Southwestern Railroad running from east to west through the county, passing through Rulo, Falls City, Salem, and Humboldt; the Southern Nebraska and the Northern Kansas Railroad enters the county on the southern line, near Falls City, passes north through Falls City, making junction at that point with Burlington and Southwestern Railroad; thence northward into Nemaha County. About \$1,000,000 of merchandise is sold to and used by the people of this county. The corn, grain, cattle, hogs and other products sold and exported will amount to \$1,500,000. The prospects are that the trade will greatly increase, as every part of the county is susceptible of cultivation.

Q. What is the total value, gold basis, of real estate and personal property?—A. About \$3,500,000 real value.

Q. What are the total values of raw material produced, total value added to raw material by manufacture?—A. Value of raw material produced, \$2,000,000.

Q. What are the aggregate profits of capital employed in transportation, in merchandising, invested in loans to General or State Governments and municipal corporations?—A. Profits, say, \$125,000 in merchandising. Can't say as to transportation; loans, none.

Q. What is the aggregate amount paid in salaries and wages to professional men, clerks, messengers, conductors, brakemen, officers and sailors, &c?—A. None.

Q. What are the names of all towns and villages in your county, with the distance and direction from your county seat, and exact locality by section, township, and range?—A. County seat, Falls City, located on sections 10, 14, and 15, township 1 north, range 16 east, 6th principal meridian.

Rulo, 10 miles east of county seat, on sections 7 and 18, township 1 north, range 18 east, 6th principal meridian.

Arago, 12 miles northeast of county seat, on section 12, township 2 north, range 17 east, 6th principal meridian.

Salem, 7 miles west of county seat, on section 3, township 1 north, range 15, 6th principal meridian.

Humboldt, 23 miles from county seat, on section 3, township 2 north, range 13 east, 6th principal meridian.

J. WARD,
Deputy County Clerk.

SALINE COUNTY.

North boundary, line between townships 8 and 9 north; east boundary, line between ranges 4 and 5 east, 6th principal meridian; south boundary, line between townships 4 and 5 north; west boundary, 6th principal meridian.

Q. What is the number of acres under cultivation?—A. Probably 12,000. Have no means of ascertaining correctly.

Q. What is the number of acres of each kind of crop?—A. Wheat, 6,000 acres; oats, 1,000 acres; corn, 4,000 acres; and barley, 500 acres.

Q. What is the average production of each crop per acre?—A. Wheat, 20 bushels; oats, 40 bushels; corn, 35 bushels; potatoes, 200 bushels; and barley, 35 bushels.

Q. What are the conditions of climate, soil, &c., suitable to each?—A. Climate generally too dry; suits small grain better than corn, chiefly on account of ripening sooner.

Q. What are the capacities for tea culture; whether any experiments have been made?—A. Tea has never been cultivated.

Q. What are the capacities for silk culture; whether any experiments have been made?—A. Never been experimented with. The mulberry tree grows here.

Q. What is the amount of wool produced, its value, and kind of sheep, &c?—A. But few sheep in the county, but they do remarkably well.

Q. What is the amount of flax raised, cost, and quantity per acre?—A. But little as yet produced; does well.

Q. What other fibrous productions?—A. None.

Q. What mineral productions?—A. None.

Q. What facilities for manufacture, water-power, convenient access to fuel, and its cost, cost of raw material for manufacture?—A. Water-power abundant; coal inconvenient and expensive; wood rather scarce, but more plenty in this county than any in the State, except some few river (Missouri) counties.

Q. What commercial facilities, natural and artificial means of communication, character and amount of domestic and foreign commerce, with the prospective expansion of local and general trade?—A. No natural means of communication. One railroad through the county in progress; one other in contemplation.

Q. What is the total value, gold basis, of real estate and personal property?—A. Seventy thousand dollars.

Q. What is the total value of raw material produced, total value added to raw material by manufacture?—A. Five thousand five hundred dollars.

Q. What are the aggregate profits of capital employed in transportation, in merchan-

dising, invested in loans to General or State Governments and municipal corporations?—A. Cannot say.

Q. What is the aggregate amount paid in salaries and wages to professional men, clerks, messengers, conductors, brakemen, officers and sailors, &c?—A. Five hundred dollars.

Q. What are the names of all towns and villages in your county, with the distance and direction from your county seat, and exact locality by section, township, and range?—A. Our county is 24 miles square, embracing townships 5, 6, 7, and 8 north, of ranges 1, 2, 3, and 4 east, of 6th principal meridian.

Swan City, the present county seat, is situated on section 15, township 5, range 4. Pleasant Hill is situated on section 9, township 7, range 3, and about 16 miles from Swan City, being 13 miles north and 7 miles west.

These are the only towns or villages in the county, but there will be two or three others in a very short time.

CHARLES MARPLES,
County Clerk.

SARPY COUNTY.

North boundary, from a point on Platte River 2 miles south of line between townships 14 and 15 north, due east to a point on Missouri River; east boundary, Missouri River; south boundary, Platte River; west boundary, Platte River.

Q. What is the number of acres under cultivation?—A. Estimated 50,000 acres.

Q. What is the number of acres of each kind of crop?—A. Corn, 25,000 acres; wheat, 15,000 acres; and oats, 10,000 acres.

Q. What is the average production of each crop per acre?—A. Corn, 60 bushels; wheat, 25 bushels; oats, 50 bushels.

Q. What are the conditions of climate, soil, &c., suitable to each?—A. Climate and soil very favorable for corn, wheat, and oats.

Q. What are the capacities for tea culture; whether any experiments have been made?—A. No experiments ever tried in tea.

Q. What are the capacities for silk culture; whether any experiments have been made?—A. No experiments ever tried in silk.

Q. What is the amount of wool produced, its value, and kind of sheep, &c?—A. Only 188 sheep in county, mostly coarse wool; wool valued 30 cents per pound.

Q. What is the amount of flax raised, cost, and quantity per acre?—A. No flax ever raised.

Q. What other fibrous productions?—A. No flax, hemp, or other fibrous productions.

Q. What mineral productions?—A. No minerals, except indications of coal found in quarries on the Missouri River.

Q. What facilities for manufacture, water-power, convenient access to fuel, and its cost, cost of raw material for manufacture?—A. Water-power on the Papillon; fuel, \$4 to \$5 per cord for soft wood.

Q. What commercial facilities, natural and artificial means of communication, character and amount of domestic and foreign commerce, with the prospective expansion of local and general trade?—A. Union Pacific Railroad and O. & S. W. Railroad, and steamers on Missouri River. Prospect good for an increase in the shipment of grain down river.

Q. What is the total value, gold basis, of real estate and personal property?—A. One million five hundred thousand dollars.

Q. What is the total value of raw material produced, total value added to raw material by manufacture?—A. Cannot form an estimate. No manufactories except flouring-mills.

Q. What are the aggregate profits of capital employed in transportation, in merchandising, invested in loans to General or State Governments and municipal corporations?—A. In merchandise, \$25,000; in manufactories, \$3,000.

Q. What is the aggregate amount paid in salaries and wages to professional men, clerks, messengers, conductors, brakemen, officers, and sailors, &c?—A. None to speak of.

Q. What are the names of all towns and villages in your county, with the distance and direction from your county seat, and exact locality by section, township, and range?—A. Bellevue, county seat, the only village at present, that in section 36, township 14 north, range 13 east, 6th principal meridian.

S. D. BANGS.

SAUNDERS COUNTY.

North boundary, Platte River; east boundary, Platte River, and from corner to townships 12 and 13 north, ranges 8 and 9 east, 6th principal meridian, to a point two miles south; south boundary, from a point two miles south of corner to townships 12 and 13 north, due west to guide meridian east, and line between townships 12 and 13 north; west boundary, from corner to townships 12 and 13 north to a point two miles south, and line between ranges 4 and 5 east, 6th principal meridian.

Q. What is the number of acres under cultivation?—A. Saunders County embraces about 760 square miles, or 491,520 acres, of which one-half is railroad land, and mostly unimproved; one-eighteenth is school land, also unimproved. About 5,000 acres are held by the State, leaving 223,464 acres available to settlers. Of this amount one-quarter, or 55,866 acres, is now broken up.

Q. What is the number of acres of each kind of crop?—A. Of the 55,866 acres now broken up, about three-tenths are in wheat, one-tenth oats, and one-tenth in barley, potatoes, trees, &c.

Q. What is the average production of each crop per acre?—A. Average yield of wheat is about 22 bushels per acre; range, 15 to 35 bushels; average yield of oats, fully 50 bushels. Potatoes yield about two hundred bushels per acre. Barley has been but little tried; yield last year, about 35 bushels. The only rye we know to have been sown, 7 acres, thin on the ground, will yield about 25 bushels. Fruit and forest trees grow with great rapidity.

Q. What are the conditions of soil, climate, &c., suitable to each?—A. Wheat requires a cool and moderately dry climate. Short straw and a plump berry, or long straw and a shriveled berry, is the rule. The same is true of oats, rye, and barley. No more straw is desired than will barely suffice to tie up the sheaf.

Q. What are the capacities for tea culture; and whether any experiments have been made?—(No answer.)

Q. What are the capacities for silk culture; whether any experiments have been made?—(No answer.)

Q. What is the amount of wool produced, its value, and kind of sheep, &c?—A. The county is well adapted to wool-growing. Grasses rich and abundant, climate dry, surface undulating, water pure and plenty. Sheep are healthy, large, and yield more wool than the same sheep did further east. Number in the county, 1,200; Spanish Merino, 1,000; coarse varieties, 200. Merinos clip 7 pounds, natives 4 pounds. Value, \$1 50 to \$4 per head. Value of fleece unwashed, 25 cents per pound.

Q. What is the amount of flax raised, cost and quantity per acre?—(No answer.)

Q. What other fibrous productions?—(No answer.)

Q. What mineral productions?—(No answer.)

Q. What facilities for manufacture, water-power, convenient access to fuel and its cost, cost of raw material for manufacturing?—A. The water-power of the county is very considerable, sufficient to drive at least 100 pair of burrs. There is also an extensive deposit of peat in the eastern part of the county. The eastern and northwestern portions of the county have convenient access to timber suitable for fuel and coarse building purposes. Oak wood sells at \$4 per cord. Sand and lime-rock, sands and clays, suitable for various purposes of manufacture, abound. Good "brine" could no doubt be obtained with the auger, as springs of brackish water are quite frequent in the Wahoo Valley.

Q. What commercial facilities, natural and artificial means of communication, character and amount of domestic and foreign commerce, with the prospective expansion of local and general trade?—A. The county possesses no navigable waters. Facilities for intercommunication consist in its beautiful surface and dry soil for wagons, and its long, direct, and beautiful valleys of easy grade for railroad lines. The Burlington and Missouri is the only railroad operated at present within the limits of the county; prospective roads are the Ashland and Columbus, by Wahoo Valley, and the Fremont and Lincoln, via Sand Creek and the middle of the county. The prospect for the increase of our commercial growth is very flattering.

Q. What is the total value, gold basis, of real estate and personal property?—(No answer.)

Q. What are the total values of raw material produced, total values added to raw material by manufacture?—(No answer.)

Q. What are the aggregate profits of capital employed in transportation, in merchandising, invested in loans to General or State Governments and municipal corporations?—(No answer.)

Q. What is the aggregate amount paid in salaries and wages to professional men, clerks, messengers, conductors, brakemen, officers, and sailors, &c?—(No answer.)

Q. What are the names of all towns and villages in your county, with the distance and direction from your county seat, and exact locality by section, township, and range?—A. Ashland, located upon section 1, township 12, of range 9 east, and the present county seat, is the only town within the limits of the county.

M. STOCKING.

SEWARD COUNTY.

North boundary, line between townships 12 and 13 north; east boundary, line between ranges 4 and 5 east, 6th principal meridian; south boundary, line between townships 8 and 9 north; west boundary, 6th principal meridian.

Q. What is the number of acres under cultivation?—A. Twenty thousand acres under cultivation.

Q. What is the number of acres of each kind of crop?—A. Corn, 7,344 acres; wheat, 6,120; oats, 4,284; barley, 1,224; potatoes, 612; sorghum, 291; gardens, 90; beans and peas, 30; sweet potatoes, 5.

Q. What is the average production of each crop per acre?—A. Wheat, 19 bushels per acre; corn, 45; oats, 45; barley, 40; buckwheat, 25; potatoes, 100; sorghum, 80 gallons molasses per acre; sweet potatoes, 80 bushels per acre.

Q. What are the conditions of climate, soil, &c., suitable to each?—A. This season there has been a complaint of dry weather, but the crops now (July 13) promise an average yield and an extra good quality of small grains. Low prices for small grain last season caused our farmers to plant more corn this season than usual, and this crop looks green and healthy, and is coming forward rapidly, notwithstanding dry weather. Grass (prairie) does not promise well, as uncultivated ground seems more sensitive to drought.

Q. What are the capacities for tea culture; whether any experiments have been made?—A. There have been no experiments in tea culture.

Q. What are the capacities for silk culture; whether any experiments have been made?—A. The mulberry tree grows wild in this county, and the capacities for raising silk ought to be good; but I know of no experiments having ever been tried.

Q. What is the amount of wool produced, its value, and kind of sheep, &c.?—A. Wool-growing is neglected in this county. On a rough estimate, there are about 1,000 pounds of wool produced annually. The sheep are generally coarse-wooled varieties; but, with the water-power in this county improved, sheep-husbandry is bound to be a feature, and furnish a profitable branch of business.

Q. What is the amount of flax raised, cost and quantity per acre?—A. Flax is not grown to the extent of more than a trifle. The soil and climate seem to be well adapted to flax-raising. I have known it grown here, but only to the extent of a few pounds.

Q. What other fibrous productions?—A. There is no hemp grown here, but I have seen it growing in neighboring counties of this State, and it will do well here.

Q. What mineral productions?—A. Plaster of Paris and gold; the latter found in small quantities on the East and North Forks of Blue River. At Camden I have seen it taken out, and handled flakes of it taken out of the place I mention. Lime is also made here; and in many parts of the county the water is strongly impregnated with sulphur. There have been no attempts made to develop any minerals yet.

Q. What facilities for manufacture, water-power, convenient access to fuel, and its cost, cost of raw material for manufacture?—A. Our principal facilities for manufacture lie in water-power on the two Blues, (east and west,) which join and form Big Blue, just south of the south boundary of the county. There are three important water-powers on the East Blue in this county; saw and grist mills, and one saw and grist mill on the West Blue. There is room on the East or North Fork of Blue for about five more, six and a half feet head, and on the West Blue for two more, with the same head. Fuel is altogether wood, which costs \$4 50 per cord.

Q. What commercial facilities, natural and artificial means of communication, character and amount of domestic and foreign commerce, with the prospective expansion of local and general trade?—A. This county had a splendid prospect for railway connection with the East and West by Burlington and Missouri River Railroad, but the line has been changed so that it touches but in the extreme southeast corner of the county at all. We expect a road in a few years up and down Blue Valley, which will be a great outlet, and also channel for supplies, lumber, &c., greatly needed now, and the demand for which is growing every day. No natural facilities, except that wagon roads are easily made and kept in repair.

Q. What is the total value, gold basis, of real estate and personal property?—A. Total value of assessment as returned by assessors in April, \$263,000, actual value, \$394,500; on a gold basis would be at least \$350,000.

Q. What are the total values of raw material produced, total value added to raw material by manufacture?—A. Raw material produced is about \$13,000, and manufacturing at least doubles its value, or increases it to \$26,000.

Q. What are the aggregate profits of capital employed in transportation, in merchandising, invested in loans to General or State Governments and municipal corporations?—A. Profits of capital in transportation, \$800; merchandising, \$6,000; manufacturing, \$4,000; aggregate, \$10,800.

Q. What is the aggregate amount paid in salaries and wages to professional men, clerks, messengers, conductors, brakemen, officers and sailors, &c.?—A. About \$6,000.

Q. What are the names of all towns and villages in your county, with the distance and direction from your county seat, and exact locality by section, township, and range?—A. County seat, Milford, situated on section 2, township 9 north, range 3 east.

Camden, from county seat southeast, located on section 32, township 9 north, range 4 east.

Westville, from county seat southwest, located on section 30, township 9 north, range 3 east.

Seward, from county seat north-northwest, located on section 21, township 11 north, range 3 east.

WM. H. REED.

SEWARD COUNTY.

North boundary, line between townships 12 and 13 north; east boundary, line between ranges 4 and 5 east, 6th principal meridian; south boundary, line between townships 8 and 9 north; west boundary, 6th principal meridian.

Q. What is the number of acres under cultivation?—(No answer.)

Q. What is the number of acres of each kind of crop?—(No answer.)

Q. What is the average production of each crop per acre?—A. Average production of wheat about 20 bushels per acre; corn, 40; oats, 40; barley, 25; potatoes, 200.

Q. What are the conditions of climate, soil, &c., suitable to each?—A. The climate and soil are well adapted to corn, wheat, oats, rye, barley, potatoes, Irish and sweet turnips, parsnips, onions, cabbage; in fact every variety of produce raised in temperate climate.

Q. What are the capacities for tea culture; whether any experiments have been made?—A. No experiments have yet been made.

Q. What are the capacities for silk culture; whether any experiments have been made?—A. No experiments have been made.

Q. What is the amount of wool produced, its value and kind of sheep, &c.?—A. There is, in my opinion, no healthier sheep country in the United States. What little experiments have been made give good satisfaction. There are probably not over 500 head of sheep in the county yet, and probably not over 2,000 pounds of wool. The sheep are of a mixture rather common. The country is very new, and no fine sheep have yet been introduced. The value of the wool produced last year was about 25 cents per pound, including transportation.

Q. What is the amount of flax raised, cost and quantity per acre?—A. None raised, to my knowledge.

Q. What other fibrous productions?—A. None.

Q. What mineral productions?—A. No developments yet.

Q. What facilities for manufacture, water-power, convenient access to fuel, and its cost, cost of raw material for manufacture?—A. The water-power of Seward County is not surpassed in any county in the State, Blue River running from near the north-west corner of the county through the center of the county, and forming a junction with the West Blue near the southeast corner of the county, and the West Blue running along near the south line of the county; and Lincoln Creek, or Middle Blue, running from the west and forming a junction with Blue River near the center of the county. All of these streams afford a sufficient amount of water for manufacturing purposes, which will doubtless make Seward one of the best manufacturing counties in the State.

Q. What commercial facilities, natural and artificial means of communication, character and amount of domestic and foreign commerce?—A. At present we have no commercial facilities by water or railroad. The domestic trade is fast growing and there is prospect of a splendid trade in this county, as it is settling very fast and has all the natural advantages to make it a densely populated county, and one of the wealthy counties of the State.

Q. What is the total value, gold basis, of real estate and personal property?—A. I have no way of ascertaining.

Q. What is the total value of raw material produced, total value added to raw material by manufacture?—A. Lands are worth from \$5 to \$50 per acre.

Q. What are the aggregate profits of capital employed in transportation, in merchandising, invested in loans to General or State Governments and municipal corporations?—A. This county is new and I cannot state with any certainty. There are ten dry goods and grocery stores in this county, and probably have a capital of \$40,000.

Q. What is the aggregate amount paid in salaries and wages to professional men, clerks, messengers, conductors, brakemen, officers and sailors?—A. There are five lawyers and six physicians in this county, and they are doing a moderately fair business, but I cannot state the amount they receive.

Q. What are the names of all towns and villages in your county, with the distance and direction from your county seat, and exact locality by section, township, and range?—

A. The names of the towns in this county are Seward, near the center of the county; Milford, 10 miles in southeast direction; Camden, near the south line, toward the southeast corner of the county.

Seward is in section 21, township 11, range 3 east.

Milford is in section —, township 9, range 3 east.

Camden is in section —, township 8, range 3 east, near east side of range. I do not know what section.

WM. R. DAVIS.

STANTON COUNTY.

North boundary, line between townships 24 and 25 north; east boundary, line between ranges 3 and 4 east, 6th principal meridian; south boundary, line between townships 20 and 21 north; west boundary, 6th principal meridian.

Q. What is the number of acres under cultivation?—A. Four thousand acres.

Q. What is the number of acres of each kind of crop?—A. One thousand acres of wheat, 500 of oats, 400 of corn, 100 of barley.

Q. What is the average production of each crop per acre?—A. Wheat, 25 bushels per acre; oats, 40 to 60; corn, 50 to 60; barley, 40 to 50.

Q. What are the conditions of climate, soil, &c., suitable to each?—A. Condition of climate very mild, soil very rich, and suitable for any crops that have been sown.

Q. What are the capacities for tea culture; whether any experiments have been made?—A. No experiments have been made with regard to the cultivation of tea.

Q. What are the capacities for silk culture; whether any experiments have been made?—A. No experiments in silk culture.

Q. What is the amount of wool produced, its value, and kind of sheep, &c.?—A. Very few sheep; value and kind unknown.

Q. What is the amount of flax raised, cost, and quantity per acre?—A. No flax raised in this county.

Q. What other fibrous productions?—A. None.

Q. What mineral productions?—A. None yet discovered in this county.

Q. What facilities for manufacture, water-power, convenient access to fuel, and its cost, cost of raw material for manufacture?—A. Facilities for water-power very good; fuel, wood per cord \$3.

Q. What commercial facilities, natural and artificial means of communication, character and amount of domestic and foreign commerce, with the prospective expansion of local and general trade?—A. Very little trade; communication only by teams.

Q. What is the total value, gold basis, of real estate and personal property?—(No answer.)

Q. What are the values of raw material produced, total values added to raw material by manufacture?—(No answer.)

Q. What are the aggregate profits of capital employed in transportation, in merchandising, invested in loans to General or State Governments and municipal corporations?—(No answer.)

Q. What is the aggregate amount paid in salaries and wages to professional men, clerks, messengers, conductors, brakemen, officers, and sailors?—(No answer.)

Q. What are the names of all towns and villages in your county, with the distance and direction from your county seat, and exact locality by section, township, and ranges?—A. Pleasant Run, county seat.

Clinton, on section 20, township 23 north, range 3 east.

WASHINGTON COUNTY.

North boundary, line between townships 19 and 20 north; east boundary, Missouri River; south boundary, line between townships 16 and 17 north; west boundary, Logan Creek, and from a point one mile east of corner to townships 18 and 19 on guide meridian east, due north to line between townships 19 and 20 north.

Q. What is the number of acres under cultivation?—A. The area of the county exceeds 230,000 acres. The lands assessed as farm lands are 150,969 acres. Homesteads, not taxable yet, and some railroad lands make up the remainder. About one-tenth of the lands, at most, may be "broken" for cultivation, or under actual cultivation—say 20,000 acres. There are almost no waste lands in the county, and very nearly the whole are of a very fertile and deep soil. The geological formation is cretaceous, the uppermost series of carboniferous limestones, cropping out only in the extreme southeast of the county, near the level of the Missouri. The subsoil is a yellow calcareous marl, of many feet in depth, degenerating into brown clays at lower depths.

Q. What is the number of acres of each kind of crop?—A. The 20,000 acres under cultivation may be pretty safely assumed to be divided among crops as follows, viz:

Spring wheat, 10,000; Indian corn, 5,000; oats, 1,800; barley, 200; potatoes, 800; sorghum and broom corn, 250; gardens, orchards, &c., 1,950.

Q. What is the average production of each crop per acre?—A. Average production of spring wheat, 20 bushels; Indian corn, 40 bushels; oats, 25 bushels; barley, 22 bushels; potatoes, 70 bushels. The average of crops with good farmers would, of course, be higher—and the average in good seasons much higher.

Q. What are the conditions of climate, soil, &c., suitable to each?—A. All our crops depend essentially upon a favorable spring. An early drought, just long enough to be of evident effect, results in more injury than a much longer drought after the crops shade the ground. Corn, once well developed, will endure on this deep soil and mellow subsoil a very severe and prolonged drought. The upland prairie is usually better and more reliable for wheat; the bottoms are considered better for corn.

Q. What are the capacities for tea culture; whether any experiments have been made?—A. No experiments have been made in tea culture here that are known. If the plant red root (*Ceanothus americanus*) has any relation to the tea plant, its tenacity of life should be a sure guarantee for the other.

Q. What are the capacities for silk culture; whether any experiments have been made?—A. No known experiments have been made in silk culture. All other insects flourish to a degree.

Q. What is the amount of wool produced, its value, and kind of sheep, &c?—A. The number of sheep returned by the assessors last spring was 1,333. They have been neglected since the great fall in the price of wool a few years ago. The prairies of Nebraska are the "downs" of America, and unless the hardness of the water should prove prejudicial to fineness of wool, they may prove to be the best land in the country for wool-growing. The tendency was to Merino grades, but they have lost favor since the decline in prices.

Q. What is the amount of flax raised, cost and quantity per acre?—A. Flax, where tried, has produced well, whether sown for seed or fiber, but the cultivation has been neglected.

Q. What other fibrous productions?—A. We know of no experiments beyond the garden in hemp, or other fibrous plant in this county.

Q. What mineral productions?—A. The mineral productions of the county are undeveloped. Indications of coal are claimed in several localities, but no proper test has been applied to determine its extent or quality.

Q. What facilities for manufacture, water-power, convenient access to fuel and its cost, cost of raw material for manufacture?—A. Water-power is moderately abundant. The probable cheapness of coal in a year or so will, however, give occasion for steam mills. Competition will, no doubt, give us the lignite of the mountains and the bituminous of Iowa, at \$6 to \$8 per ton. Wheat, barley, corn, and wool, for the manufacture of flour, malt, alcohol, textile fabrics, and paper, can be produced cheap and abundantly.

Q. What commercial facilities, natural and artificial means of communication, character and amount of domestic and foreign commerce, with the prospective expansion of local and general trade?—A. Our commercial facilities are of the first order. The mining regions of the Rocky Mountains being accessible by the Missouri River in one direction, and the Union Pacific Railroad in another. Through Iowa, Minnesota, Missouri, and Kansas, we have, in part, and will soon have more, railroads communicating with all the States east of us, from Lake Superior, round by the Atlantic, to Galveston on the Gulf. The Sioux City and Pacific Railroad passes through the heart of this county. The basis of the trade of this county and Nebraska, at present, is grain; chiefly wheat and corn, flour and meal. Very soon beef will rival our production of wheat.

Q. What is the total value, gold basis of real estate and personal property?—A. The assessed value of real estate in the county last March was \$1,288,121; the actual currency value is so much greater that the gold value may safely be stated at one and a half millions. Personal property assessed at \$466,361, so far below the true value, that is, gold, it may be stated at not less than half a million. In addition, the railroad is assessed at \$363,000, which just about represents the iron, ties, and buildings. The total value, gold basis, can scarcely fall short of three millions.

Q. What are the total values of raw material produced, total values added to raw material by manufacture?—A. The total value of raw material produced was greatly below former years, by the sudden depression of prices. It may be stated at about \$250,000. The conversion of wheat into flour, by a few mills, constitutes all that is materially added in value by manufacture, say from \$10,000 to \$20,000.

Q. What are the aggregate profits of capital employed in transportation, in merchandising, invested in loans to General and State Governments and municipal corporations?—A. Aggregate profits of capital invested in transportation, it is impossible to state with any accuracy. In merchandising, they may be stated at \$20,000 to \$25,000, exclusive of grain, in the shipment of which, perhaps, \$25,000 would be a fair estimate;

and in lumber, imported and manufactured, \$12,000; say \$60,000. Loans are too limited to justify an estimate.

Q. What is the aggregate amount paid in salaries and wages to professional men, clerks, messengers, conductors, brakemen, officers, sailors, &c?—A. The amount paid in aggregate to those in this class must be roughly estimated at, say, \$10,000 to \$20,000.

Q. What are the names of all towns and villages in your county, with the distance and direction from your county seat, and exact locality by section, township, and range?—A. Blair, county seat, is in sections 11 and 12, township 18, range 11 east.

De Soto, south from Blair 4 miles, in sections 18, 20, 21, 28, township 18, range 12 east.

Cumming City, north from Blair 2 miles, in section 34, township 19, range 11 east.

Fort Calhoun, south from Blair 10 miles, in sections 11 and 12, township 17, range 12 east.

Fontenelle, west from Blair 20 miles, in sections 8, 9, 16 and 17, township 18, range 9 east.

Belle Creek, west from Blair 13 miles, in section 12, township 17, range 9 east.

Kennard, south from Blair 6 miles, in section 5, township 17, range 11 east.

Bono, north from Blair 7 miles, in section 13, township 19, range 11 east.

JOHN S. BOWEN.

YORK COUNTY.

North boundary, line between townships 12 and 13 north; east boundary, 6th principal meridian; south boundary, line between townships 8 and 9 north; west boundary, line between ranges 4 and 5 west.

Q. What is the number of acres under cultivation?—A. There are about 3,000 acres under cultivation, besides about 500 acres, broken this year, ready for next year's crops. I make my estimate on the number of claims taken in the county, as follows: 77 families, 40 acres each, 3,080; 26 new claims, 20 acres each, 520. The 20 acres may be added to the 3,080, as it was old breaking on claims abandoned.

Q. What is the number of acres of each kind of crop?—A. Wheat, 900 acres; oats, 538; barley, 438; corn, 538; miscellaneous, 586.

Q. What is the average production of each crop per acre?—A. Wheat, 25 bushels per acre; oats, 70; barley, 60; corn, 60; potatoes, 150; tobacco, 1,400 pounds; sorghum, 70 gallons.

Q. What are the conditions of climate, soil, &c., suitable to each?—A. Climate exceedingly salubrious and genial. Winter does not exceed ten weeks in duration. Atmosphere dry, clear, and bracing. Summer heat tempered by cool breezes. Soil a rich, black, vegetable mold, slightly salinous and alkaliescent, from two to six feet deep, well adapted to the profitable growth of all crops raised north of St. Louis, capable of resisting unusual wet or continuous drought. Subsoil rich, clayey loam, not impervious to water. Soil and climate as well adapted to the growth of crops mentioned in question No. 2 as any other county in the United States.

Q. What are the capacities for tea culture; whether any experiments have been made?—A. No experiments have been made in tea culture. I am creditably informed that the tea plant is successfully cultivated near Knoxville, Tennessee. My informant says "it grows about five feet in height, is hardy, and needs no protection from frosts. It bears an abundant crop, with beautiful fragrant flowers in October. The following season it matures a seed somewhat resembling the seed of our native hazel, and grows up readily. The tea produced from the leaves of the plant very much resembles in flavor the tea from the 'Young Hyson' plant." I am confident that this plant can be successfully cultivated not only in York County but any other county south of the Platte River in Nebraska.

Q. What are the capacities for silk culture; whether any experiments have been made?—A. The capacity for silk culture far exceeds that of Eastern States where silk has been profitably produced. The soil and climate are well adapted to the cultivation of the mulberry and the feeding of the silk-worm, although no experiments have been made as yet.

Q. What is the amount of wool produced, its value, and kind of sheep, &c?—A. There are no sheep in York County, although the lay of the land, the water, and the rich, nutritious grasses of this county are such that wool-growing must eventually be one of the leading features of the county, as also cattle-raising, which is engaged in by a large number of persons at present, and many more are preparing for this line of business.

Q. What is the amount of flax raised, cost and quantity per acre?—A. Flax is only grown in very limited quantities; not enough to form correct estimates on cost or quantity per acre. Where it is sown thin it produces large quantities of seed, far beyond anything I ever saw in any other State. Where it has been sown thin it produces the finest fiber. The soil and climate are well adapted to its profitable culture. This county is almost entirely undeveloped. It is only about five years since the first per-

manent settlement was made, and each successive settler has devoted his entire attention to the cultivation of the cereals which he used in home consumption. Like the counties east and south, York County is rich in agricultural resources and beauty; and, when fully developed, will be found not only rich in these but in minerals.

Q. What other fibrous productions?—(No answer.)

Q. What mineral productions?—A. Coal, limestone, and minerals are reported to have been discovered along the rivers. No mines or quarries are worked as yet.

Q. What facilities for manufacture, water-power, convenient access to fuel and its cost, cost of raw material for manufacture?—A. There are several good water privileges on the West Blue River, Beaver Creek, and Lincoln Creek. There is a heavy growth of timber along each of these water-courses. Good four-foot wood is worth from \$3 to \$5 per cord. The facilities for manufacturing are as good as any county in the Northwest.

L. R. WARNER.

In summing up the returns from the various counties indicated in the foregoing statistics, it is a matter of regret that all the counties of the State did not furnish the information sought to be obtained. In fact many of them had to be written to repeatedly, and it was only after considerable importunity that several of them finally forwarded the brief statements herewith submitted. It is hoped, however, that a sufficient area has been covered by these county reports to give an approximate average of the general agricultural resources and character of the State at large.

One of the principal features developed in these reports is the now unquestionable fact that the soil of this State withstands the extremes of drought and rain in a manner not found in any other agricultural region of the Union. It matters not whether the rains are excessive and in such quantities as would destroy the cereals in other regions, or whether the want of rain and the high temperature reach the other extreme, the crops of the State are equally good, and the quantity produced in either case is fully equal to that obtained from the most favorable conditions in other States. I can add my own personal observation in corroboration of the statements made by the gentlemen who have furnished the foregoing statistics on this particular point.

The whole of the information obtained has been carefully tabulated and averages deduced, thus enabling any one at a glance to find the characteristic features of any one county in the State. To render such a table still more useful there should be appended meteorological columns, giving the fluctuations of the barometer, thermometer, and hygrometer, together with the rain-fall and force and direction of the winds. But, as this was utterly impossible under the circumstances, I have supplied that want by such general observations as I have been able to obtain; trusting that the information contained in this report may, in some measure, satisfy the inquiries of the honorable Commissioner.

SILK CULTURE.

It will be seen from the various county reports that no experiments have been attempted whereby the feasibility of raising the *bombyx* and cultivating the food best adapted to it could be tested.

Many of the reports, however, certify to the fact that the mulberry grows wild in the State. The temperature and rain-fall will probably be found ill adapted to the ordinary process of silk culture in Nebraska. With a winter which nearly always falls a little below zero, a serious obstacle will be found to the safety of the worm, and to maintain artificial heat for its existence would be a very questionable method viewed financially. The rain-fall is generally most in May, the very time when the worm needs all the heat and dryness of atmosphere which can be obtained. The dews, too, at this season are very heavy, and as moisture is very destructive to the worm, causing a diarrheal complaint which destroys millions of them in the most favorable localities, it is presumable that this peculiarity of climate will preclude the successful cultivation of silk in the eastern portions of the State.

West of 100° longitude from Greenwich, however, it is probable that, owing to the dryness of the atmosphere and the uniform heat of the spring and summer months, the culture of silk might be made successful. Taking the rain-fall of Laramie as a fair indication of that which obtains as far east as 100° 30' west longitude, we find a climate suitable during the spring and summer months both as regards temperature and rain-fall.

TEA CULTURE.

The reports on this subject will be found very uniform; every county stating that no experiments have been tried.

The authorities on this subject nearly all concur in assigning a warm and moist climate as that most congenial to the successful growth of this plant; and while the con-

dition of climate essential to its cultivation may be found in the United States, it is clear, from the meteorological tables embodied in this report, that the winter months indicate a temperature entirely too low for profitable tea culture. Nevertheless, the circulation of inquiries by this office, in every county in the State, has aroused a lively interest in the subject, and I doubt not that, as a result of our labors to obtain information, some parties will make the attempt in the future.

In this connection it might not be out of place to remark that the conditions of climate where the tea-plant is native may not be absolutely essential to its growth, and that, as in maize and cotton, the introduction of a plant so extensively used as tea, may lead to its acclimation, even in sections of country where the isothermals indicate a much lower temperature than that accorded by observers to its normal condition in China and Japan.

IRRIGATION.

This subject, fraught with so much importance to every agriculturist in the United States, and more particularly interesting to the residents of the western portion of this State, attracts but little attention anywhere in the Union. Every year we hear the cry going up from numerous sections that "the drought has destroyed the crops," and yet there are but few localities where that wonderful aid to fertilization, "water," cannot be used for purposes of irrigation. Even in the districts of country freest from drought, a properly used system of irrigation would increase the farmer's produce and consequently enrich his coffers.

Thus far we have but one experiment in this direction in this surveying district, and I append a letter from Colonel Josiah B. Park, giving a condensed description of it:

"The Lincoln County Ditch Company was organized in May, 1870, under the general incorporation law of Nebraska. Its officers are M. C. Keith, president, J. B. Park, general superintendent, and Guy C. Barton, secretary. The water is taken out of South Platte River, in section 1, township 13 north, range 31 west, and runs a northeasterly course to the corner to townships 13 and 14 north, ranges 30 and 31 west; thence east, on the township line, $4\frac{1}{2}$ miles, and empties into the North Platte River. It runs on the highest ground between the rivers, and will irrigate all the land on both sides, to the amount of about 10,000 acres, although that amount is not cultivated as yet.

"The present size of the ditch is 6 feet wide by 1 foot deep, and runs over 250,000 cubic feet of water every 24 hours. The entire cost has been less than \$800, and the expenses to keep in repair will be trifling. It has been used on crops the present season with the most flattering success, although late in the season when completed.

"Its capacity may be increased to any desired amount, with little extra expense. It is proposed to run branches through the streets of North Platte next season, for the accommodation of gardens and yards. This may be done on every street, the water running a north or east course."

It is hoped that, as experiments are made and successful results obtained, an amount of stimulus will be infused in our farmers that may tend to multiply the means of irrigation throughout the State.

The above success of Colonel Park's ditch, when thoroughly understood, I doubt not will have a strong tendency to direct the attention of our people to the usefulness and wonderful productiveness resulting from properly directed efforts to supply the lack of moisture in the soil of the western portions of Nebraska.

The legislature of this State will very probably offer inducements to settlers, by remitting taxation on irrigated lands, or otherwise, so as to encourage a further development of this system of supplying moisture to the soil.

RAILWAYS.

The following communications from some of the railways constructed and being constructed are incorporated in this report as a means of showing what the facilities of transportation through the State are at present, and what they are intended to be:

UNION PACIFIC RAILROAD.

"GENERAL SUPERINTENDENT'S OFFICE,
"Omaha, Nebraska, July 15, 1870.

"DEAR SIR: Your letter of July 13th is received. By law this company have to make an annual report, which is to be presented to the United States Government before the 1st of October next. The report will terminate with the termination of the fiscal year, the 30th of June last. Should the directors of this company authorize the publication of this report, when made, it will furnish all the information desired by the Commissioner of the General Land Office, and will be at his service.

"It will not be possible for the force in this office to comply with the request which

you make in behalf of the said Commissioner, except through this report, as above stated.

"Yours, truly,

"C. G. HAMMOND,
"General Superintendent.

"ROBERT R. LIVINGSTON,
"Surveyor General District of Iowa and Nebraska, Plattsmouth, Nebraska."

BURLINGTON AND MISSOURI RIVER RAILROAD, IN NEBRASKA.

"PLATTSMOUTH, NEBRASKA, July 14, 1870.

"DEAR SIR: Yours of the 13th instant, respecting information desired, is at hand. In reply would state that, as our road is yet in process of 'construction,' not having passed into the regular 'operating' stage, it would give an unfair and erroneous idea to take as data the small amount of business done by us as a criterion of our ability or prospective influence.

"Taking your letter in detail, the length of completed road may be called 55 miles, being from here to Lincoln. The average cost per mile of the same, including all buildings now erected and rolling stock now running, being \$30,000.

"Station-houses are built at Louisville and Ashland of good size, and others contemplated at Plattsmouth and Lincoln, while smaller houses, similar to those now built at Omaha Junction and South Bend, will be put up at Greenwood, Waverly, and Newton, these to serve as temporary stations till business requires larger accommodations. The station-house at Louisville is valued at \$2,000, and that at Ashland at \$3,000, the smaller ones at \$500.

"Our shops at Plattsmouth, with their usual fixtures and contents, are valued at about 40,000. Water stations along the road at Louisville and Ashland worth some \$5,000 each, and others will be erected of similar value at Waverly and Lincoln.

"The company have 7 locomotives, 100 flat cars, and 25 box cars now in use, while 50 more of the latter are ordered and in process of construction. Locomotives are valued when new at about \$15,000 each; box cars, \$1,000 each; and flats, \$700 each. The pay of conductors is from \$60 to \$75 per month; brakemen, \$50; locomotive engineers, \$3 50 per day; firemen, \$1 75 to \$2 25 per day; wipers, \$2; watchmen, \$1 75; foreman machine shop, \$3 50; machinists, \$2 75 to \$3 25; coppersmith, \$3; blacksmith, \$3 to \$3 25; helpers, \$2; car repairers, \$2 50; stationary engineer, \$2 50; laborers, \$2; foreman of carpenters, \$5; carpenters, \$3 to \$3 25; yard masters, \$75 per month; section foremen, \$60 per month; station agents, \$50 to \$75 per month.

"As previously stated, no estimate can be given of any value relative to details of freight or passenger business, as the road at present being without western connection and unfinished, and being run mainly for 'constructive' purposes, its expenses are credited to that account, and no separate operating account kept.

"The road will connect with the Union Pacific Railroad in the vicinity probably of Fort Kearney. No other connections are at present thought of.

"Yours, truly,

"THOMAS DOANE,
"Chief Engineer.

"ROBERT R. LIVINGSTON,
"Surveyor General, Plattsmouth, Nebraska."

OMAHA AND NORTHWESTERN RAILROAD.

"OMAHA, NEBRASKA, August 5, 1870.

"DEAR SIR: Your communication of the 13th ultimo came to hand in my absence and in reply would say our road runs from Omaha to the Niobrara, via Fort Calhoun De Soto, Blair, Cuming City, and West Point; up the Elkhorn, and North Fork of the same; up Middle Branch of North Fork; over divide to head of Branzais Creek, and down same to the Missouri River, at the mouth of the Niobrara; entire distance 183 miles. We have 10 miles built, which cost us \$18,000 per mile; have 15½ miles under contract, which will cost about same as amount already built. Have already expended \$200,000.

"The grading on the 10 miles finished cost \$5,400 per mile; on that under contract the grading is estimated to cost about \$4,000 per mile.

"We are not running any trains, but will as soon as we have amount finished that is now under contract.

"If you have a map in your office of Snyder Bros., of Chicago, for 1870, you will see our line by section lines as far as West Point.

"Respectfully, &c.,

"J. E. BOYD, President.

"Colonel R. R. LIVINGSTON,
"Surveyor General."

BURLINGTON AND SOUTHWESTERN RAILWAY.

"RULO, NEBRASKA, July 15, 1870.

"In answer to yours of the 13th, addressed to 'President or officer in charge of Nemaha Valley Railroad,' I would say there is no company of this name.

"The Burlington and Southwestern Railway Company, organized in Nebraska, under the non-resident railroad act, is building a railroad in the Nemaha Valley.

"From the inclosed letter-head, you can see our line east to Burlington, Iowa, which is now in process of construction.

"We cross the Missouri River at Rulo, Nebraska, and thence follow up the Nemaha Valley to Table Rock, in Pawnee County; thence to Pawnee City; thence to, or near, Blue Springs (possibly to Beatrice) in Gage County; thence to, or near, Rock Creek (possibly to Big Sandy) in Jefferson County; thence southwest to the Republican Valley, at, or near, the point where the Republican River passes into the State of Kansas; thence southwest, on the most practicable and direct route, to Sheridan or Carson, on the Kansas Pacific Railroad.

"The line on inclosed letter-head should be corrected to conform to above description, in order to give a correct view of our projected line.

"Connections.—At Rulo, besides our main eastern line, we connect southeast with St. Louis, via the 'Kansas and Nebraska Railroad,' now being built on west side of Missouri River, via Kansas City, Leavenworth, Atchison, Iowa Point, and White Cloud, in Kansas.

"At Table Rock, in Pawnee County, we connect with projected line to Lincoln, via Tecumseh, in Johnson County.

"On the Little Blue River, we connect with St. Joseph and Denver Railroad, now being built to Fort Kearney.

"At the Republican River, we connect with the line projected, up the Republican Valley, in the direction of Denver.

"At Sheridan or Carson, we connect with the projected line to Santa Fé and Albuquerque.

"At Pawnee City or at Blue Springs, we connect southward, down the Big Blue Valley, with Manhattan, Kansas; or from Salem, in Richardson County, we reach Manhattan, via Seneca and Centralia, in Kansas. Which of these two routes will be adopted, I cannot now say.

"Thus, our main line, from the initial point at Burlington, Iowa, to Sheridan, passes, in its entire length, through the finest portion of the West, by the shortest possible line from Chicago, and in a direction which, in addition to its east and west strength, embraces north and south feeders and connections, leading to all important points, and opening up the trade of the country in all directions. On its merits, it is second to none in the West.

"Present condition of the work in Nebraska.—The road is now built eleven miles west from Rulo, at a cost of \$17,500 per mile; thence to Pawnee City. The work is now under contract and being prosecuted vigorously, and will be completed to Table Rock by December 1, and to Pawnee City early next summer, at about the same average cost.

"Your other question I cannot now answer with sufficient accuracy to be of value to you. Our labor is fluctuating, and our offices are not filled systematically.

"You can obtain a large map of our main line by addressing a letter to J. Edwin Conant, No. 33 Wall street, New York, or to Henry Cleves & Co., New York.

"Respectfully, yours,

"J. K. HORNISH,

"Superintendent Burlington and Southwestern Railroad Company.

"ROBERT R. LIVINGSTON,

"Surveyor General."

MIDLAND PACIFIC RAILWAY.

"NEBRASKA CITY, NEBRASKA, July 25, 1870.

"DEAR SIR: Inclosed please find tracing of Midland Pacific Railway, from Nebraska City to Lincoln, Nebraska, together with such facts as we are able to give.

"Respectfully,

"N. B. KENDALL,

"Engineer in charge construction.

"Midland Pacific Railway.

"Distance graded, 57½ miles.

"Distance ironed, complete, 11½ miles.

"Cost per mile, finished, \$18,000.

"Cost per mile, grading, \$2,850.
 "Already expended for grading, \$156,000.
 "To complete grading, \$7,000.
 "Wages, engineers', average \$125 per month.
 "Wages, mechanics', average \$75 per month.
 "Wages, carpenters', average \$75 per month.
 "Wages, laborers', average \$50 per month.
 "Wages, clerks', average \$75 per month.
 "Number miles telegraph, none.

"N. B. KENDALL.

"ROBERT R. LIVINGSTON,

"Surveyor General, Plattsmouth, Nebraska."

In conclusion, I would state that, having resided in Nebraska for eleven years, my own opinions of the extraordinary productiveness of this State are fully corroborated by the foregoing reports from the various counties. A system of railways is being rapidly developed by which the interior products of farm labor are afforded immediate and prompt transportation to market, thus enabling the settler to obtain returns in cash for the produce of his lands without delay. The rapid increase of settlements is protecting the young timber from destruction by fire, and as a consequence this article is increasing instead of being consumed. Coal can be readily obtained in any quantities at low rates, and settlements on the unoccupied lands are thus provided against a lack of fuel.

No doubt there will be an immense increase in the "stock" business of the interior. Already thousands of cattle are brought from Texas and fattened on the extraordinary rich grasses of Nebraska, and the meat from this peculiar stock commands ready sale in Chicago. Those who are already engaged in this branch of business are rapidly realizing immense profits, and this fact will stimulate a greater development of this trade.

Without disparaging other sections of the Union, it is thought Nebraska presents inducements to settlers which, as a whole, are rarely found in any other portion of the United States.

Trusting that this crude accumulation of facts may be found satisfactory, I have the honor to be, very respectfully, your obedient servant,

ROBT. R. LIVINGSTON,

Surveyor General.

A.—*Meteorological table showing the temperature and rain-fall in Nebraska, 1863.*

Station.	Month.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature for month.	Rain or melted snow fall.	Average for each month.	
								Mean temperature.	Mean rain-fall.
	1863.		°		°	°	In.	Degrees.	In.
Elkhorn City..	January ..	2	51	16	— 3	28.6	0.75	} 29.8	0.75
Bellevue	do.	4	59	16	— 6	31.0			
Elkhorn City..	February ..	27	46	2	— 6	23.5	0.90	} 24.9	0.73
Bellevue	do.	18	50	1, 2	2	26.3	0.56		
Elkhorn City..	March	21	68	4	3	35.2	0.50	} 36.1	0.50
Bellevue	do.	21	70	4	7	37.0			
Elkhorn City..	April	17	88	3	27	53.8	0.75	} 53.1	0.75
Bellevue	do.	17	80	3	31	52.3			
Elkhorn City..	May	19, 20	86	5	45	63.8	3.88	} 63.4	3.88
Bellevue	do.	15	87	6, 23	40	63.0			
Richland	June	27	96	21	52	67.89	2.84	} 67.69	2.84
Bellevue	do.	27	90	20	48	67.50			
Elkhorn City..	July	9, 10	96	16	56	72.6	2.25	} 71.8	2.25
Bellevue	do.	30	86	13	54	71.10			
Fontenelle	August ...	16	96	29	35	72.5	2.70	72.5	2.70
Bellevue	September.	14	93	18	37	65.6	1.75	65.6	1.75
Fontenelle	October ...	14, 15, 16	70	23	4	36.6	0.50	} 39.6	0.75
Bellevue	do.	6, 11	70	31	14	42.5	1.00		
Bellevue	November. {	{ 6, 11, 12, 17, 18 }	60	28	— 3	35.7	1.65	} 39.3	2.00
Fontenelle	do.	6, 11, 12, 18	60	28	— 15	32.9	2.35		
Fontenelle	December.	3, 22	41	31.	— 28	18.4	2.90	} 21.9	3.37
Bellevue	do.	6	53	31	— 20	25.4	3.85		

ROBT. R. LIVINGSTON,
*Surveyor General.*SURVEYOR GENERAL'S OFFICE,
Plattsmouth, Nebraska, August 31, 1870.

B.—*Meteorological table showing the temperature and rain-fall in Nebraska, 1866.*

Station.	Month.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature for month.	Rain or melted snow fall.	Average for each month.	
								Mean temperature.	Mean rain-fall.
	1866.		°		°	°	In.	Degrees.	In.
Elkhorn.....	January	11, 28, 31	45	20	—14	19.8	} 20.6	2.05
Bellevue.....	do	29	46	20	—11	21.3	2.05		
Elkhorn.....	February	23	62	15	—20	25.8	} 24.5	0.53
Bellevue.....	do	28	65	15	—13	24.8	0.40		
Glendale.....	do	28	65	15	—32	22.8	0.66		
Elkhorn.....	March	30	65	16	8	29.4	} 29.5	2.48
Bellevue.....	do	1	58	15	12	29.7	0.66		
Glendale.....	do	30	71	16	—1	29.4	2.30		
Elkhorn.....	April	2	90	5	25	50.9	} 51.4	2.28
Bellevue.....	do	2	86	5	26	51.8	1.37		
Glendale.....	do	2	91	5	22	51.6	3.19		
Elkhorn.....	May	18	93	1	37	61.3	} 60.7	1.88
Bellevue.....	do	18	90	1, 29	38	60.7	1.91		
Glendale.....	do	19	92	1	36	60.2	1.85		
Elkhorn.....	June	24	93	5	52	68.7	} 68.3	5.00
Bellevue.....	do	24	94	4, 6, 17	50	68.3	5.27		
Glendale.....	do	7	95	16	46	68.0	5.93		
Elkhorn.....	July	22	102	2	60	78.4	} 78.4	2.16
Bellevue.....	do	21	99	2	60	79.0	1.52		
Glendale.....	do	22	97	2	60	77.8	2.80		
Elkhorn.....	August	7	101	24	50	72.2	} 72.6	2.34
Bellevue.....	do	3	95	23	51	73.2	1.46		
Glendale.....	do	6	101	22	45	72.3	3.22		
Elkhorn.....	September	30	83	21	40	58.2	} 58.4	5.78
Bellevue.....	do	1	80	21	36	59.6	5.90		
Glendale.....	do	27	85	20	32	57.3	5.65		
Elkhorn.....	October	12	84	24, 30	24	54.1	} 51.8	0.77
Bellevue.....	do	1	80	21	23	48.2	0.34		
Glendale.....	do	12	86	24	14	53.1	.....	
Elkhorn.....	November	6	70	30	10	39.7	} 40.7	1.24
Bellevue.....	do	2, 6, 7, 8	64	29	15	43.6	1.33		
Glendale.....	do	1, 6	74	30	6	38.8	1.15		
Elkhorn.....	December	4	61	29, 31	23.7	} 24.6	1.56
Bellevue.....	do	3, 4	50	31	4	26.9	1.51		
Glendale.....	do	1	57	11	—1	23.3	1.60		

ROBT. R. LIVINGSTON,
Surveyor General.

SURVEYOR GENERAL'S OFFICE,
Plattsmouth, Nebraska, August 31, 1870.

C.—Meteorological table showing the temperature and rain-fall in Nebraska, 1868.

Station.	Month.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature for month.	Rain or melted snow fall.	Average for each month.	
								Mean temperature.	Mean rain-fall.
	1868.		°		°	°	In.	Degrees.	In.
Dakota	January ..	1	50	27, 29	—18	10.8	0.70	12.0	0.76
Omaha Mission ..	do ..	1, 3	49	29	—12	14.8	0.80		
Elkhorn	do ..	1	45	29	—15	11.7	0.70		
De Soto	do ..	1	43	29	—19	11.15	0.70		
Glendale	do ..	4	52	16	—26	11.1	0.85		
Dakota	February ..	16, 18	56	9	—14	22.2	0.50	24.1	0.68
Omaha Mission ..	do ..	21	62	9	—14	25.3	0.60		
Elkhorn	do ..	16	60	9	—13	24.5	0.35		
De Soto	do ..	16	57	9	—17	23.3	0.79		
Glendale	do ..	16	66	9	—22	24.0	1.15		
Dakota	March	22, 23	80			40.4		42.7	2.18
Omaha Mission ..	do ..	22	80	2, 3	15	42.0	1.32		
Elkhorn	do ..	24	85	2	12	42.7			
De Soto	do ..	24	86	2	11	41.7	2.74		
Bellevue	do ..	24	90	2	10	45.3	1.90		
Glendale	do ..	24	92	2	4	43.9	2.75		
Dakota	April	30	72	3	21	44.3		45.3	2.59
Omaha Mission ..	do ..	30	79	3	23	45.9	1.00		
Elkhorn	do ..	30	73	3	20	44.2			
De Soto	do ..	11	78	3	22	44.5	3.16		
Bellevue	do ..	21, 30	76	3	24	47.3	2.60		
Glendale	do ..	22	89	3, 8	22	45.5	3.60		
Dakota	May	31	90	11	45	64.6		65.0	7.70
Omaha Mission ..	do ..	5	84	7	45	65.5			
Elkhorn	do ..	25	83	6	45	64.6			
De Soto	do ..	1	85	6	45	65.1			
Bellevue	do ..	1, 3-5	86	6	48	65.0	7.20		
Glendale	do ..	1	89	8, 11	45	65.0	8.20		
Dakota	June							72.5	3.79
Omaha Mission ..	do ..	30	92	10	50	72.7	2.25		
Elkhorn	do ..	18	93	9	54	71.2			
De Soto	do ..	30	93	9	51	72.2	4.13		
Bellevue	do ..	27	94	9	54	74.6			
Glendale	do ..	18, 30	92	9	51	72.0	5.00		
Omaha Mission ..	July	20	105	4, 24, 31	70	83.5	2.00	83.2	2.52
Elkhorn	do ..	20	102	24	65	81.4			
De Soto	do ..	20	104	24	67	82.0	3.39		
Bellevue	do ..	20	99	24	68	85.2	1.40		
Glendale	do ..	20	106	24, 25	66	83.7	3.00		
Nebraska City ..	do ..	20	99	25	68	83.2	2.82		
Elkhorn	August ..	23	89	22	53	69.5		70.5	4.01
De Soto	do ..	5, 23	88	29, 30	53	68.8	2.45		
Fontenelle	do ..	16	89	29	52	71.8			
Bellevue	do ..	24	89	29, 30	55	70.0	1.90		
Glendale	do ..	1-5	90	29	50	69.6	6.30		
Nebraska City ..	do ..	2, 23, 24	84	31	55	73.0	5.40		
Elkhorn	September ..	11	86	22	36	56.9		58.2	2.61
De Soto	do ..	11	86	22	33	54.5	3.27		
Fontenelle	do ..	11	90	23	30	57.7			
Bellevue	do ..	11	85	23	36	59.1	2.20		
Glendale	do ..	11	86	22	30	57.3	2.35		
Nebraska City ..	do ..	11	84	23	41	63.6			
Dakota	October ..	2	90	17	22	48.7		50.9	2.30
Omaha Mission ..	do ..	4	78	17	26	50.3	1.70		
Elkhorn	do ..	4	82	17	28	50.6			
De Soto	do ..	4	81	17	25	49.3	0.82		
Fontenelle	do ..	4	88	17	25	52.2	1.60		
Bellevue	do ..	25	82	8, 17	33	52.5	1.30	35.6	1.41
Glendale	do ..	4	85	7, 21	25	49.7	1.90		
Nebraska City ..	do ..	4, 6	80	17	33	53.5	6.47		
Dakota	November ..	2	68	27	7	34.1			
Omaha Mission ..	do ..	2	73	17	16	36.5	1.36		
Elkhorn	do ..	2	73	27	13	34.2			
De Soto	do ..	2	70	27	11	33.3	1.18		
Omaha City	do ..	14	73	16, 17	18	37.3		35.6	1.41
Bellevue	do ..	2	71	27	17	37.1	0.50		
Glendale	do ..	2	75	27	9	33.9	1.90		
Nebraska City ..	do ..	2	71	16, 17, 19, 27	20	38.1	2.10		

C.—*Meteorological table showing the temperature and rain-fall in Nebraska, 1868—Continued.*

Station.	Month.	Date.	Maximum tem- perature.	Date.	Minimum tem- perature.	Mean tempera- ture for month.	Rain or melted snow fall.	Average for each month.	
								Mean tem- perature.	Mean rain- fall.
	1868.		°		°	°	In.	Degrees.	In.
Dakota.....	December.	16	49	11	—19	20.7	.....	21.5	2.73
Omaha Mission	.....do.....	16	48	10, 11	—8	24.0	1.50		
Elkhorn.....	.....do.....	2	45	11	—15	20.5	.....	
De Soto.....	.....do.....	17	46	11	—15	19.9	2.00		
Omaha City...	.....do.....	17	50	10	—12	21.8	1.81		
Bellevue.....	.....do.....	17	45	11	—20	22.5	6.40		
Glendale.....	.....do.....	17	45	11	—30	19.4	2.10		
Nebraska City.	.....do.....	17	49	11	—17	23.2	2.58		

ROBT. R. LIVINGSTON,
*Surveyor General.*SURVEYOR GENERAL'S OFFICE,
Plattsmouth, Nebraska, August 31, 1870.

D.—*Meteorological table of monthly means of temperature and rain-fall for 1863, 1866, and 1868.*

Month.	Year.	Mean temper- ature.	Mean rain- fall.	Average for three years.	
				Temperature.	Rain-fall.
		<i>Degrees.</i>	<i>Inches.</i>	<i>Degrees.</i>	<i>Inches.</i>
January	1863	29.8	0.75	} 20.8	1.19
Do	1866	20.6	2.05		
Do	1868	12.0	0.76		
February	1863	24.9	0.73	} 24.5	0.65
Do	1866	24.5	0.53		
Do	1868	24.1	0.68		
March	1863	36.1	0.50	} 36.1	1.72
Do	1866	29.5	2.43		
Do	1868	42.7	2.18		
April	1863	53.1	0.75	} 49.9	1.87
Do	1866	51.4	2.28		
Do	1868	45.3	2.59		
May	1863	63.4	3.88	} 63.0	4.49
Do	1866	60.7	1.88		
Do	1868	65.0	7.70		
June	1863	67.60	2.84	} 69.6	4.08
Do	1866	68.3	5.60		
Do	1868	72.5	3.79		
July	1863	71.8	2.25	} 77.8	2.13
Do	1866	78.4	2.16		
Do	1868	83.2	2.52		
August	1863	72.5	2.70	} 71.9	3.02
Do	1866	72.6	2.34		
Do	1868	70.5	4.01		
September	1863	65.6	1.75	} 60.7	3.38
Do	1866	58.4	5.78		
Do	1868	58.2	2.61		
October	1863	39.6	0.75	} 47.4	1.07
Do	1866	51.8	0.17		
Do	1868	50.9	2.30		
November	1863	39.3	2.00	} 38.5	1.55
Do	1866	40.7	1.24		
Do	1868	35.6	1.41		
December	1863	21.9	3.37	} 22.7	2.55
Do	1866	24.6	1.56		
Do	1868	21.5	2.73		

Average annual mean temperature deduced from the above.....48°.6

Average annual mean rain-fall deduced from the above.....27.88 inches.

ROBT. R. LIVINGSTON,
*Surveyor General.*SURVEYOR GENERAL'S OFFICE,
Plattsmouth, Nebraska, August 31, 1870.

E.—A tabulated statement of the general statistics of Nebraska,

Name of county.	Total area.	Area under cultivation.	Area covered by each crop raised.					
			Wheat.	Corn.	Oats.	Rye.	Barley.	Potatoes and other crops.
	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>
Burt	311, 463	100, 000	50, 000	25, 000	25, 000			
Butler	375, 752	15, 000	5, 000	4, 000	4, 000	200		1, 800
Buffalo	573, 112							
Cass	348, 307	55, 520	18, 000	22, 000	10, 000			5, 520
Cedar	494, 214	15, 000	10, 000	1, 000	1, 000		1, 500	1, 000
Colfax	258, 569	14, 000	2, 500	6, 000	2, 000	200	50	3, 250
Cuming	323, 503							
Dakota	168, 113							
Dixon	298, 019	9, 000	6, 187	1, 797				1, 599
Dodge	343, 867							
Douglas	206, 320							
Fillmore	366, 792	1, 000	400	150	250		150	50
Gage	438, 472							
Hall	641, 886	16, 000	2, 000	6, 000	5, 000		2, 000	1, 000
Hamilton	348, 987							
Jefferson	715, 664	12, 000	5, 000	5, 000	1, 200		400	400
Johnson	240, 707	50, 000	25, 000	15, 000	4, 000		4, 000	2, 000
Kearney	290, 918	100						
Lancaster	550, 188	15, 000						
Lincoln	1, 877, 000	1, 000		100	600		100	200
L'Eau qui Court	532, 383	800	400	225	100		10	65
Madison	366, 792	15, 000	5, 000	5, 500	2, 000	100	200	2, 200
Merrick	513, 339							
Nemaha	252, 169							
Otoe	396, 756							
Pawnee	275, 094	50, 000	15, 000	15, 000	10, 000	500	5, 000	4, 500
Platte	431, 643	60, 594	15, 000	18, 000	15, 000	100	400	8, 000
Richardson	350, 267	285, 000	30, 000	50, 000	25, 000	1, 000	1, 000	64, 000
Saline	366, 792	12, 000	6, 000	4, 000	1, 000		500	500
Sarpy	150, 347	50, 000	15, 000	25, 000	10, 000			
Saunders	489, 084	55, 866	16, 760	22, 433	5, 586		5, 586	5, 000
Seward	366, 792	20, 000	6, 120	1, 344	4, 284		1, 224	1, 058
Stanton	275, 094	4, 000	1, 000	400	500		100	2, 000
Washington	244, 209	20, 000	10, 000	5, 000	1, 800		200	800
York	366, 792	3, 000	900	538	538		438	586
Total	14, 529, 406	849, 880	240, 267	159, 487	124, 858	1, 900	36, 808	103, 728

deduced from the returns of counties as in the foregoing report.

Average production of each crop per acre.						Condition of climate, soil, &c., suitable to each crop.	Capacity for tea culture.	Capacity for silk culture.	Wool-growing.		
Wheat.	Corn.	Oats.	Rye.	Barley.	Potatoes, &c.				Amount.	Value.	Kind of sheep.
<i>Bu.</i>	<i>Bu.</i>	<i>Bu.</i>	<i>Bu.</i>	<i>Bu.</i>	<i>Bu.</i>				<i>Pounds.</i>		
20	65	45				Well adapted.....	(a)	(a)		30c. p'r lb.	(d)
18	35	40		25	100	Well adapted.....	(a)	(a)			
18	45	45	22	25	200	Well adapted.....	(a)	(a)	5,429	\$2,000	(e)
25	50	65		45	300	Good for all crops.....	(a)	(a)	3,000	25c. p'r lb., or \$750.	(e)
20	50	60	20	15	180	Excellent.....	(a)	(a)			
25	45				300	Good for small grain.....	(a)	(a)			(e)
25	40	50		50	150	Good.....	(a)	(a)			
20	50	50		35	200	Soil very productive.....	(a)	(a)	7,000		
28	60	50		40	300	Suitable for all crops.....	(a)	(a)			(f)
22	50	40	35	40	200	Suitable for all crops.....	(a)	(a)			
40	50	60			200	Favorable.....	(b)	(e)			
33½	20	60		40		Soil a rich loam.....	(a)	(a)	10,000		(g)
25	40	50	20	50	150	Good for small grain.....	(a)	(a)			(f)
						Good for cereals.....	(a)	(a)			
20	40	35	25	30	300	Good for all crops.....	(a)	(a)	100,000	\$30,000	(e)
20	45	65			75	Good for all crops.....	(a)	(a)			
20	40	36	25	10	150	Favorable for cereals.....	(a)	(a)			
19	55	50	22	22	150	Every way favorable.....	(a)	(a)	30,000	10,500	(h)
20	35	40		35	200	Good for cereals.....	(a)	(a)			
25	60	50				Good for cereals.....	(a)	(a)	700	210	(i)
22		50	25	35	200	Good for cereals.....	(a)	(a)	8,000	2,000	(e)
19	45	45		40	100	Good for cereals.....	(a)	(a)	1,000	250	(i)
25	50	40		40		Good for cereals.....	(a)	(a)			
20	40	25		22	70	Good for cereals.....	(a)	(a)	4,000	1,200	(e)
25	60	70		60	150	Good for cereals.....	(a)	(a)			
22.96	46.66	49.44	23.80	35.45	186.9				169,129	46,910	

(a) No trial.

(b) Probably good.

(c) Promises success.

(d) Native.

(e) Merino.

(f) Mixed.

(g) Mexican.

(h) Southdown, Leicester, and Saxony.

(i) Common.

E.—A tabulated statement of the general

Name of county.	Flax culture.	All other fibrous productions.	Mineral productions.	Facilities for manufacture.		Commercial facilities.	
				Water-power.	Cost of fuel.	Means of communication.	Increase of general and local trade.
Burt.....	(j)	(k)	None	(q)	.....	R. R. and Mo. Riv'r	(v)
Butler.....			.....			
Buffalo.....			.....			
Cass.....	(j)	(k)	None	(r)	Wood, \$5; coal, \$8.	River and railroad.	(v)
Cedar.....	(k)	(k)	Chalk-stone.....	(r)	Wood, \$2..	Missouri River.....	
Colfax.....	(x)	(k)	None known.....	(r)	High	Union Pacific R. R.	(v)
Cuming.....			.....			
Dakota.....			.....			
Dixon.....	(k)	(k)	Coal undeveloped	(r)	.....	Missouri River.....	(v)
Dodge.....			.....			
Douglas.....			.....			
Fillmore.....	(k)	(k)	.....	(r)	Coal, \$10 ..	Poor	
Gage.....			.....			
Hall.....	(j)	(p)	None	(r)	Wood, \$6; coal, \$8.	Union Pacific R. R.	(v)
Hamilton.....			.....			
Jefferson.....	(k)	(k)	Iron ore and gypsum.....	(r)	Wood, \$3..	.....	(v)
Johnson.....	(k)	(k)	Coal in quantities.....	(r)	.....	Poor	(v)
Kearney.....		(p)	Coal and other minerals.....	.....	Coal, \$15 ..	Railroad	(v)
Lancaster.....			.....			
Lincoln.....	(k)	(k)	None	(q)	Wood, \$6..	Union Pacific R. R.	
L'Eau qui Court.	(k)	(k)	.....	(r)	Wood, \$6..	Missouri River.....	
Madison.....			.....	(s)	Wood, \$2..	Very poor	(v)
Merrick.....			.....			
Nemaha.....			.....			
Otoe.....			Coal in small quantities.....	(r)	.....	River and railroad ..	
Pawnee.....	(t)		Coal in large quantities.....	(t)	Coal, \$15 ..	.....	(v)
Platte.....	(m)		None known.....	(r)	Coal, \$10 ..	Union Pacific R. R.	(v)
Richardson.....	(m)		Coal, marl, &c.....	(r)	Wood, \$—	Mo. River and R. R.; unsurpassed.	(v)
Saline.....	(m)		.....	(t)	Wood, \$5..	B. & M. River R. R.	(v)
Sarpy.....	(n)		None	(r)	Wood, \$5..	Mo. River and two railroads.	(v)
Saunders.....			.....	(r)	Wood, \$4..	B. & M. River R. R.	(v)
Seward.....	(j)	(p)	Gypsum and gold	(r)	Wood, \$4..	.....	(v)
Stanton.....			.....	(r)	Wood, \$3..	.....	(v)
Washington.....			Undeveloped	(u)	.....	Mo. River and R. R.	
York.....	(o)		.....			
Total.....			.....			

(j) Successful.

(k) No trial.

(l) But few experiments.

(m) Very successful.

(n) None raised.

(o) In small quantities.

(p) Hemp grows well.

(q) Poor.

(r) Good.

(s) Very good.

(t) Abundant.

(u) Fair.

(v) Rapid.

(w) Healthy.

(x) Climate good for flax culture.

SURVEYOR GENERAL'S OFFICE,
Plattsmouth, Nebraska, August 31, 1870.

statistics of Nebraska, &c.—Continued.

Total value in gold of real estate and personal property.	Raw material.		Profits of capital employed in—		Aggregate of salaries and wages.	Remarks.
	Value of the amount produced.	Value added by manufacture.	Transportation.	Merchandise.		
\$2,000,000						The cost of raw material used in manufactures was not given in the returns to this office by the various counties.
4,000,000	Not known	\$223,308	\$330,000	\$125,000	\$150,000	
1,000,000			None.	40,000		
				100 p'r c		
500,000	\$95,000	47,000		100 p'r c		Dixon County has 10 per cent profit in investments in the bonds of the General Government, and the same in those of Nebraska.
42,000						
3,000,000	500,000	75,000		20 per c		Hall County has \$15,000 invested in municipal corporation enterprises.
750,000	220,000	6,000	5,000	5,000	6,000	
1,000,000	50,000					Johnson County's commerce is in stock, and 30 per cent. per annum has been added to its capital used in manufactures. Lincoln County has added to the value of raw material by manufacture, 50 per cent.
20,000						
6,000,000	85,000				94,000	
300,000				4,000	1,000	
6,000,000						
1,000,000	100,000				25,000	Pawnee County gives \$100,000 as the amount of profits on transportation, merchandise, and its investment in General, State, and municipal government funds.
1,159,498						
2,552,368						Platte County has 12,000 acres planted in fruit and forest trees.
70,000	5,500				500	
1,500,000		3,000				
350,000	13,000	13,000	800	6,000	6,000	
3,000,000	250,000	20,000		25,000	20,000	
34,243,866	1,318,500	392,808	335,800	205,000	302,500	Total profits in merchandise not complete, the returns not being given in full.

ROBT. R. LIVINGSTON,
Surveyor General.

No. 1.

Statement showing the amount expended for salaries of surveyor general and clerks during fiscal year ending June 30, 1870.

Quarter ending September 30, 1869.....	\$1,757 33
Quarter ending December 31, 1869.....	1,816 57
Quarter ending March 31, 1870.....	2,000 00
Quarter ending June 30, 1870.....	1,925 82
Total.....	<u>7,499 72</u>

No. 2.

Statement showing the amount expended for rent of office and incidental expenses during fiscal year ending June 30, 1870.

Quarter ending September 30, 1869.....	\$520 35
Quarter ending December 31, 1869.....	283 60
Quarter ending March 31, 1870.....	310 50
Quarter ending June 30, 1870.....	583 61
Total.....	<u>1,698 06</u>

Recapitulation.

Salaries of surveyor general and clerks during the fiscal year.....	\$7,499 72
Rent of office and incidental expenses during the fiscal year.....	1,698 06
Total.....	<u>9,197 78</u>

ROBT. R. LIVINGSTON,
Surveyor General, Iowa and Nebraska.

SURVEYOR GENERAL'S OFFICE,
Plattsmouth, August 31, 1870.

No. 4.—*Statement showing description and area of lands for which township maps and descriptive lists have been furnished to the register of the land office, Dakota City land district, at Dakota, Nebraska, during the fiscal year ending June 30, 1870.*

Township north.	Range east.	Acres.	Triplicate maps—when sent.	Descriptive lists—when sent.	Special surveys.
33	1	553.70	July 7, 1869.....	July 7, 1869.....	Fragmentary.
33	2	541.60	July 7, 1869.....	July 7, 1869.....	Fragmentary.
28	8	4.40	June 15, 1870.....	June 15, 1870.....	Fragmentary.
29	8	352.60	June 15, 1870.....	June 15, 1870.....	Fragmentary.
28	9	340.06	June 15, 1870.....	June 15, 1870.....	Fragmentary.
29	9	1,481.70	June 15, 1870.....	June 15, 1870.....	Fragmentary.
Total	area.....	3,274.06			

No. 5.—*Statement showing description and area of lands for which township maps and descriptive lists have been furnished to the register of the land office at Vermillion, Dakota Territory, by order of the Commissioner of the General Land Office, during the fiscal year ending June 30, 1870.*

Township north.	Range west, D. T.	Acres.	Triplicate maps—when sent.	Descriptive lists—when sent.	Special surveys.
88	47	852.20	June 15, 1870.....	June 15, 1870.....	Fragmentary.
89	47	7.87	June 15, 1870.....	June 15, 1870.....	Fragmentary.
88	48	661.38	June 15, 1870.....	June 15, 1870.....	Fragmentary.
89	48	135.05	June 15, 1870.....	June 15, 1870.....	Fragmentary.
Total	area.....	1,656.50			

Transcripts of the field-notes of townships 28 and 29 north, ranges 8 and 9 east, of 6th principal meridian, Nebraska, and maps and transcripts of the field-notes of townships 88 and 89 north, ranges 47 and 48 west, of 5th principal meridian, Dakota Territory, were also sent, June 15, 1870, to the surveyor general of Dakota Territory, by order of the honorable Commissioner of the General Land Office.

ROBT. R. LIVINGSTON,
Surveyor General Iowa and Nebraska.

SURVEYOR GENERAL'S OFFICE,
Plattsmouth, August 31, 1870.

No. 6.—*Statement showing description and area of lands, for which township maps and descriptive lists have been furnished to the register of the land office, Nemaha land district, at Beatrice, Gage County, Nebraska, during the fiscal year ending June 30, 1870.*

Township north.	Range west.	Acres.	Triplicate maps—when sent.	Descriptive lists—when sent.
2	17	22, 972. 27	June 15, 1870.....	June 15, 1870.
3	17	23, 013. 39	June 15, 1870.....	June 15, 1870.
4	17	22, 935. 96	June 15, 1870.....	June 15, 1870.
1	18	22, 691. 34	June 15, 1870.....	June 15, 1870.
2	18	22, 841. 64	June 15, 1870.....	June 15, 1870.
3	18	22, 903. 52	June 15, 1870.....	June 15, 1870.
4	18	22, 899. 52	June 15, 1870.....	June 15, 1870.
1	19	23, 057. 33	June 15, 1870.....	June 15, 1870.
2	19	22, 199. 55	June 15, 1870.....	June 15, 1870.
3	19	22, 934. 16	June 15, 1870.....	June 15, 1870.
4	19	22, 943. 64	June 15, 1870.....	June 15, 1870.
5	19	23, 047. 70	June 15, 1870.....	June 15, 1870.
6	19	23, 029. 66	June 15, 1870.....	June 15, 1870.
4	20	23, 116. 22	June 15, 1870.....	June 15, 1870.
5	20	23, 047. 80	June 15, 1870.....	June 15, 1870.
6	20	23, 114. 31	June 15, 1870.....	June 15, 1870.
4	21	23, 093. 99	June 15, 1870.....	June 15, 1870.
5	21	23, 032. 81	June 15, 1870.....	June 15, 1870.
6	21	23, 018. 96	June 15, 1870.....	June 15, 1870.
Total	acres	435, 893. 77		

A diagram of an island in the Platte River, in township 14 north, range 9 east, of 6th principal meridian, Nebraska, was furnished to the register of the land office, Omaha land district, at West Point, Nebraska, on the 15th day of June, 1870.

ROBT. R. LIVINGSTON,

Surveyor General Iowa and Nebraska.

SURVEYOR GENERAL'S OFFICE,

Plattsmouth, August 31, 1870.

No. 7.—Statement showing description and area of lands for which township maps and descriptive lists have been furnished to the register of the land office, South Platte River land district, at Lincoln, Lancaster County, Nebraska, during the fiscal year ending June 30, 1870.

Township north.	Range west.	Acres.	Triplicate maps—when sent.	Descriptive lists—when sent.
7	19	22,975.84	June 15, 1870.....	June 15, 1870.
7	22	23,017.42	June 15, 1870.....	June 15, 1870.
7	22	23,138.31	June 15, 1870.....	June 15, 1870.
8	23	23,034.73	June 15, 1870.....	June 15, 1870.
8	23	23,163.21	June 15, 1870.....	June 15, 1870.
7	24	23,091.74	June 15, 1870.....	June 15, 1870.
8	24	23,054.60	June 15, 1870.....	June 15, 1870.
9	24	23,042.51	June 15, 1870.....	June 15, 1870.
10	24	19,925.80	June 15, 1870.....	June 15, 1870.
9	25	23,053.45	June 15, 1870.....	June 15, 1870.
10	25	22,948.53	June 15, 1870.....	June 15, 1870.
11	25	19,553.83	June 15, 1870.....	June 15, 1870.
10	26	23,074.67	June 15, 1870.....	June 15, 1870.
11	26	21,216.94	June 15, 1870.....	June 15, 1870.
12	26	See list No. 8.	June 15, 1870.....	June 15, 1870.
10	27	23,076.52	June 15, 1870.....	June 15, 1870.
11	27	23,106.59	June 15, 1870.....	June 15, 1870.
12	27	19,422.61	June 15, 1870.....	June 15, 1870.
10	28	23,068.17	June 15, 1870.....	June 15, 1870.
11	28	23,179.01	June 15, 1870.....	June 15, 1870.
12	28	13,864.34	June 15, 1870.....	June 15, 1870.
13	28	See list No. 8.	June 15, 1870.....	June 15, 1870.
12	29	23,091.92	June 15, 1870.....	June 15, 1870.
13	29	See list No. 8.	June 15, 1870.....	June 15, 1870.
12	30	23,007.20	June 15, 1870.....	June 15, 1870.
13	30	See list No. 8.	June 15, 1870.....	June 15, 1870.
12	31	23,040.44	June 15, 1870.....	June 15, 1870.
13	31	See list No. 8.	June 15, 1870.....	June 15, 1870.
12	32	22,934.60	June 15, 1870.....	June 15, 1870.
13	32	23,047.25	June 15, 1870.....	June 15, 1870.
13	33	23,001.97	June 15, 1870.....	June 15, 1870.
14	33	19,016.94	June 15, 1870.....	June 15, 1870.
13	34	See list No. 8.	June 15, 1870.....	June 15, 1870.
14	34	See list No. 8.	June 15, 1870.....	June 15, 1870.
13	35	See list No. 8.	June 15, 1870.....	June 15, 1870.
13	36	See list No. 8.	June 15, 1870.....	June 15, 1870.
13	37	See list No. 8.	June 15, 1870.....	June 15, 1870.
13.	38	See list No. 8.	June 15, 1870.....	June 15, 1870.
13	39	See list No. 8.	June 15, 1870.....	June 15, 1870.
13	40	See list No. 8.	June 15, 1870.....	June 15, 1870.
13	41	See list No. 8.	June 15, 1870.....	June 15, 1870.
13	42	See list No. 8.	June 15, 1870.....	June 15, 1870.
12	43	See list No. 8.*	June 15, 1870.....	June 15, 1870.
Total acres,.....		597,149.14		

* The boundary between the Grand Island and the South Platte River land districts being the right bank of the Platte River, instead of a township line or parallel, divides the various townships through which that river flows, and hence the same numbers of township and range occur in different lists, as above; but the entire area of the township is given in one or the other list, and omitted in the corresponding one.

ROBT. R. LIVINGSTON,
Surveyor General Iowa and Nebraska.

SURVEYOR GENERAL'S OFFICE,
Plattsmouth, August 31, 1870.

No. 8.—Statement showing description and area of lands for which township maps and descriptive lists have been furnished to the register of the land office, Grand Island land district, at Columbus, Platte County, Nebraska, during the fiscal year ending June 30, 1870.

Township north.	Range west.	Aeres.	Triplicate maps—when sent.	Descriptive lists—when sent.
18	12	22, 864.50	June 15, 1870.....	June 15, 1870.
20	13	22, 728.69	June 15, 1870.....	June 15, 1870.
19	14	22, 474.26	June 15, 1870.....	June 15, 1870.
13	17	23, 077.87	June 15, 1870.....	June 15, 1870.
13	18	22, 966.18	June 15, 1870.....	June 15, 1870.
13	19	23, 068.72	June 15, 1870.....	June 15, 1870.
13	20	23, 064.20	June 15, 1870.....	June 15, 1870.
13	21	23, 051.14	June 15, 1870.....	June 15, 1870.
13	22	23, 031.04	June 15, 1870.....	June 15, 1870.
13	23	22, 948.36	June 15, 1870.....	June 15, 1870.
10	24	See list No. 7.	June 15, 1870.....	June 15, 1870.
11	24	22, 806.42	June 15, 1870.....	June 15, 1870.
12	24	22, 818.83	June 15, 1870.....	June 15, 1870.
13	24	23, 003.86	June 15, 1870.....	June 15, 1870.
11	25	See list No. 7.	June 15, 1870.....	June 15, 1870.
12	25	23, 023.23	June 15, 1870.....	June 15, 1870.
13	25	23, 088.27	June 15, 1870.....	June 15, 1870.
14	25	23, 106.03	June 15, 1870.....	June 15, 1870.
15	25	23, 086.68	June 15, 1870.....	June 15, 1870.
11	26	See list No. 7.	June 15, 1870.....	June 15, 1870.
12	26	21, 496.44	June 15, 1870.....	June 15, 1870.
13	26	23, 081.08	June 15, 1870.....	June 15, 1870.
14	26	23, 092.08	June 15, 1870.....	June 15, 1870.
15	26	23, 041.00	June 15, 1870.....	June 15, 1870.
12	27	See list No. 7.	June 15, 1870.....	June 15, 1870.
13	27	22, 951.31	June 15, 1870.....	June 15, 1870.
14	27	23, 027.77	June 15, 1870.....	June 15, 1870.
12	28	See list No. 7.	June 15, 1870.....	June 15, 1870.
13	28	19, 610.35	June 15, 1870.....	June 15, 1870.
14	28	23, 014.25	June 15, 1870.....	June 15, 1870.
13	29	19, 913.49	June 15, 1870.....	June 15, 1870.
14	29	23, 038.25	June 15, 1870.....	June 15, 1870.
13	30	21, 104.43	June 15, 1870.....	June 15, 1870.
13	31	22, 531.73	June 15, 1870.....	June 15, 1870.
14	33	See list No. 7.	June 15, 1870.....	June 15, 1870.
15	33	22, 938.07	June 15, 1870.....	June 15, 1870.
16	33	22, 896.79	June 15, 1870.....	June 15, 1870.
13	34	22, 312.96	June 15, 1870.....	June 15, 1870.
14	34	19, 814.61	June 15, 1870.....	June 15, 1870.
15	34	22, 947.82	June 15, 1870.....	June 15, 1870.
16	34	22, 913.09	June 15, 1870.....	June 15, 1870.
13	35	21, 488.63	June 15, 1870.....	June 15, 1870.
13	36	21, 398.69	June 15, 1870.....	June 15, 1870.
13	37	21, 372.21	June 15, 1870.....	June 15, 1870.
13	38	21, 282.39	June 15, 1870.....	June 15, 1870.
13	39	21, 187.11	June 15, 1870.....	June 15, 1870.
13	40	21, 260.90	June 15, 1870.....	June 15, 1870.
13	41	21, 146.69	June 15, 1870.....	June 15, 1870.
13	42	22, 579.78	June 15, 1870.....	June 15, 1870.
12	43	11, 136.35	June 15, 1870.....	June 15, 1870.
13	43	22, 919.22	June 15, 1870.....	June 15, 1870.
12	44	11, 953.87	June 15, 1870.....	June 15, 1870.
13	44	23, 060.13	June 15, 1870.....	June 15, 1870.
12	45	12, 060.92	June 15, 1870.....	June 15, 1870.
13	45	23, 050.07	June 15, 1870.....	June 15, 1870.
12	46	12, 094.29	June 15, 1870.....	June 15, 1870.
13	46	23, 025.09	June 15, 1870.....	June 15, 1870.
12	47	12, 005.56	June 15, 1870.....	June 15, 1870.
13	47	23, 033.65	June 15, 1870.....	June 15, 1870.
14	47	23, 054.01	June 15, 1870.....	June 15, 1870.
12	48	11, 970.47	June 15, 1870.....	June 15, 1870.
13	48	23, 019.50	June 15, 1870.....	June 15, 1870.
14	48	22, 890.88	June 15, 1870.....	June 15, 1870.
12	49	12, 014.44	June 15, 1870.....	June 15, 1870.
13	49	23, 098.64	June 15, 1870.....	June 15, 1870.
14	49	23, 121.17	June 15, 1870.....	June 15, 1870.
12	50	11, 936.07	June 15, 1870.....	June 15, 1870.
13	50	22, 998.25	June 15, 1870.....	June 15, 1870.
14	50	23, 078.86	June 15, 1870.....	June 15, 1870.
14	51	23, 018.25	June 15, 1870.....	June 15, 1870.
14	52	23, 062.32	June 15, 1870.....	June 15, 1870.
14	53	23, 035.49	June 15, 1870.....	June 15, 1870.
14	54	22, 977.92	June 15, 1870.....	June 15, 1870.
14	55	23, 096.56	June 15, 1870.....	June 15, 1870.
14	56	23, 070.63	June 15, 1870.....	June 15, 1870.
15	56	23, 063.26	June 15, 1870.....	June 15, 1870.
Total	acres	1, 494, 496.97		

No. 9.—*Contracts for surveys of the public lands in Nebraska, 1870.*

[These surveys comprise 7,161 miles of subdivisions, 1,971 1-7 miles of exteriors, and 304 miles of meanders.]

Number.	Contractor.	Survey.	Miles.	Rate.	Exteriors and subdivisions.	Contract.	Bond.	Object of survey.
31	H. C. Fellows	Subdivisions townships 15 and 16, ranges 40 to 55, and township 16, range 56 west.	900	\$6	\$5, 400	\$5, 400	\$10, 800	To extend the subdivisions within the limits of the Union Pacific Railroad grant.
32	N. J. & J. N. Paul	Exterior lines townships 25 to 32, ranges 9 and 10 west. Subdivisions townships 25 to 28, ranges 9 and 10, and township 32, ranges 9 and 10 west to Niobrara River. Meanders on the Niobrara River, estimated.	165 585	7 6	1, 155 3, 510			
33	Burch & Warner	Exterior lines townships 21 to 24, ranges 9 to 16 west. Subdivisions townships 17 to 20, ranges 15 and 16, and township 20, range 14 west. Meanders on North and South Forks of Loup River.	15 312 540	6 7 6	90 2, 154 3, 240	4, 755	9, 510	To benefit settlements on the Elkhorn and Niobrara Rivers.
34	J. R. & J. S. Livingston.	Subdivisions townships 21 to 23, range 7, townships 21 to 24, ranges 8 to 10, and township 25, range 8. Exterior lines townships 15 and 16, ranges 43 to 48 west. Subdivisions township 14, ranges 41 to 46, and township 15, ranges 41 to 48 west. Meanders on the North Platte River.	20 252	6 7	130 1, 764	5, 544	11, 088	To extend the subdivisions on the two forks of the Loup, and prepare exteriors for 1871. To accommodate settlements on and near the Elkhorn River.
35	McBride & Murphy.	Exterior lines townships 5 to 8, ranges 25 to 30 west.	96 840	7 6	672 5, 040	5, 760	11, 520	
36	P. C. Patterson.	Subdivisions townships 5 and 6, ranges 22, 23, and 24 west. Subdivisions township 9, ranges 26 to 28, and townships 10 and 11, ranges 29 to 32 west. Subdivisions townships 14 and 15, ranges 35 to 40 west. Meanders on the North Platte River.	20 252	6 7	130 1, 764	5, 544	11, 088	To advance the subdivisions and prepare exterior lines within the Union Pacific Railroad grant.
37	E. C. Smith.	Exterior lines township 15, ranges 27 to 32 west.	600	6	3, 960	3, 924	7, 900	To extend subdivisions near the Republican, and prepare exteriors for another season.
38	Charles Wimpf.	Subdivisions township 14, ranges 30, 31, and 32, and township 15, ranges 27 to 32 west. Meanders on the North and South Platte Rivers.	720 80 66 540	6 6 7 6	4, 320 480 462 3, 240	3, 960 4, 800	7, 920 9, 600	To extend subdivisions within and near the Union Pacific Railroad grant.
39	J. B. Pack.	Exterior lines township 12, ranges 41 and 42 west to State line. Subdivisions township 12, ranges 33 to 42 west. Meanders on South Platte and closing on third standard and parallel. Exterior lines townships 1 to 4, ranges 25 to 28 west.	60 12 1-7	6 7	360 85	4, 062	8, 130	To complete the subdivisions along the North Platte and within the Union Pacific Railroad grant.
40	William Hardin	Subdivisions township 3, ranges 20 to 24, and township 4, ranges 22 to 24 west. Meanders on the Republican River, estimated.	576 9 108 480	6 6 7 6	3, 456 54 1, 176 2, 880	3, 535	7, 203	To extend subdivisions along the North and South Platte within railroad grant.
41	William E. Daugherty.	Total.	100 8, 536 1-7	6	600 52, 288	4, 656	9, 320 104, 652	To extend subdivisions within the Union Pacific Railroad grant.

SURVEYOR GENERAL'S OFFICE, Plattsmouth, Nebraska, August 31, 1870.

ROBT. R. LIVINGSTON, *Surveyor General.*

No. 10.—*Estimate of sums required for the extension of the public surveys in the State of Nebraska for the fiscal year ending June 30, 1872.*

STANDARD LINES.

5th, 6th, 7th, and 8th standard parallels north, ranges 17 to 24 west, 192 miles, at \$10 per mile.	\$1,920
3d guide meridian west, townships 17 to 32 north, 96 miles, at \$10 per mile.	960
Total estimate for standard lines.	2,880

EXTERIOR LINES.

Townships 21 to 33, ranges 11 to 16 west, or to Niobrara River, 702 miles, at \$7 per mile.	\$4,914
Townships 15 and 16, ranges 17 to 24 west, 132 miles, at \$7 per mile.	924
Townships 1 to 4, ranges 29 to 42 west, or to State line, 507 miles, at \$7 per mile.	3,549
Townships 5 to 8, ranges 31 to 42 west, or to State line, 417 miles, at \$7 per mile.	2,919
Townships 9 to 11, ranges 41 and 42 west, or to State line, 31 miles, at \$7 per mile.	217
Township 16, ranges 25 to 32 west, or to State line, 42 miles, at \$7 per mile.	294
Total estimate for exterior lines.	12,817

SUBDIVISION LINES.

Townships 1 and 2, ranges 20 to 24, 600 miles, at \$6 per mile.	\$3,600
Townships 3 and 4, ranges 25 to 32, 960 miles, at \$6 per mile.	5,760
Townships 3 and 4, ranges 25 to 32, meanders on Republican River, 144 miles, at \$6 per mile.	864
Townships 5 to 8, ranges 25 to 32, 1,920 miles, at \$6 per mile.	11,520
Township 9, ranges 29 to 32, 240 miles, at \$6 per mile.	1,440
Townships 10 and 11, ranges 33 to 42, 1,032 miles, at \$6 per mile.	6,492
Townships 21 to 33, ranges 11 to 14, 3,047 miles, at \$6 per mile.	18,282
Townships 31 to 33, ranges 15 and 16, 337 miles, at \$6 per mile.	2,022
Townships 29 to 31, ranges 9 to 10, 360 miles, at \$6 per mile.	2,160
Township 14, ranges 17 to 24, 480 miles, at \$6 per mile.	2,880
Township 16, ranges 25 to 32, 480 miles, at \$6 per mile.	2,880
Township 16, ranges 35 to 48, 840 miles, at \$6 per mile.	5,040
Township 16, ranges 42 to 44, meanders on North Platte River, 35 miles, at \$6 per mile.	210
Total estimate for subdivisions.	63,150
Total estimate for exterior lines.	12,817
Total estimate for standard lines.	2,880

Total sum required for surveys in fiscal year ending June 30, 1872. 78,847

ROBT. R. LIVINGSTON,
Surveyor General Iowa and Nebraska.

SURVEYOR GENERAL'S OFFICE,
Plattsmouth, Nebraska, August 31, 1870.

No. 11.—*Estimate of sums required for office expenses for fiscal year ending June 30, 1872.*

Salary of surveyor general	\$2,000
Salary of chief clerk	1,600
Salary of principal draughtsman	1,300
Salary of assistant draughtsman	1,200
Salary of accountant	1,200
Salary of two copyists, at \$1,100 each	2,200
Office rent, messenger, stationery, fuel, &c.	2,000
Binding 100 volumes field-notes	200
Total.	11,700

ROBT. R. LIVINGSTON,
Surveyor General Iowa and Nebraska.

SURVEYOR GENERAL'S OFFICE,
Plattsmouth, Nebraska, August 31, 1870.

No. 17 G.—*Report of the surveyor general of New Mexico.*

SURVEYOR GENERAL'S OFFICE,
Santa Fé, New Mexico, August 20, 1870.

SIR: In compliance with your instructions of May 2, I have the honor to submit my report of the transactions of this office for the year ending June 30, 1870.

PUBLIC SURVEYS.

Surveys have been made under contracts with Robert B. Willison, dated June 23 and December 10, 1869, both amounting to \$11,147 23, and calling for the appropriation of \$5,000 of last year and unexpended balance of previous appropriations.

These surveys were all upon the Pecos River. I am informed that nearly all the surveyed land upon this river has already been taken up with preëmption and homestead claims. The moment it is known that the Fort Sumner reservation is restored to the public domain large portions of it will be taken up by actual settlers. A survey of it will be promptly required. Indeed, the valley of the Pecos and its tributaries for many miles below Sumner is being rapidly occupied by settlers, it having very inviting pasturage, as well as yielding largely of the various crops cultivated. It being on one of the main thoroughfares of the immense overland cattle traffic of Texas, it cannot long remain unsettled. Several hundred thousand head annually seek this channel to a northern market.

The pending sale of public lands has excited a great deal of interest throughout the Territory. Large numbers of preëmptors and homestead claimants have presented their claims, and very many more only await the survey and offering of their lands to come forward and secure their claims.

Did the land laws authorize the register to issue certificates of location upon unsurveyed lands, the settler would feel a much greater security, and large numbers now occupying such lands would at once avail themselves of this inchoate title, and would thus afford a reliable indication of the need of surveys in their several localities.

The calls for surveys in various directions are numerous, and it is often difficult to determine the relative needs of different sections, and expend such small appropriations as are available to the best advantage.

The recent discoveries of silver in the southwestern portion of the Territory, and the large influx of population likely to follow, will require a speedy survey of that section.

The greater degree of security felt by the inhabitants under the present Indian policy—the greater rarity of depredations and hostile raids—is steadily diffusing population, hitherto, for greater security, confined to towns and villages, and rapidly opening up new agricultural districts.

MINERAL SURVEYS.

Of this class of surveys but one has been made during the year, that of the Santa Rita del Cobre mine, west of the Rio Grande, in Doña Ana County. Application for the survey of another mineral claim, that of the San Agustin mine, east of the Rio Grande, in the same county, was made and the survey executed since the 30th of June. A much larger number is likely to be called for during the current and ensuing years, owing to the increase of activity in mining enterprises in this Territory.

PRIVATE LAND GRANTS.

I beg leave again to call attention to the embarrassment growing out of the large number of undetermined Spanish and Mexican land grants. Only last month there was filed in this office for the first time a grant, made in 1832, covering nearly all New Mexico east of the Rio Grande, with a portion of Texas and Colorado, embracing 45,000,000 acres! Many other grants, for various indefinite amounts, are constantly heard of as conflicting with the actual settler or the miner, that are not even found of record in this office.

The limits of no grant have been determined by survey during the past year.

A commission to settle and determine these claims, and a time fixed within which to present them, seems to be the most urgent want of the land system of New Mexico.

AGRICULTURE.

The present year is likely to repay the agriculturist amply, all crops affording promise of abundance. The rainy season has served to dissipate the fears of failure of crops springing from the unusually small amount of snow in the mountains, upon the melting of which the country is so largely dependent for the water used in irrigation.

The sugar-beet has received sufficient attention to promise excellent results where properly cultivated. The beet of this Territory shows upon analysis a much larger percentage of saccharine matter than the same variety raised in France and Germany.

The long staple cotton, tried, upon a small scale, by Dr. De Leon, of Albuquerque, proved entirely successful.

For tea the climate here would seem to promise as secure and genial a home as it has found in California. Experiments—as yet untried—can alone determine the fact.

Of the silk culture the same may be said.

Tobacco grows well over large districts of New Mexico, the dryness of the climate being especially adapted to the process of curing.

Numerous other products of similar latitudes will doubtless in the future become staple products of this Territory.

The recent introduction of a considerable number of the larger and finer-wooled sheep promises great improvement in the important staple of New Mexico, wool.

MANUFACTURES.

The only woolen mill in the Territory has proved so successful as to induce its owners to greatly enlarge its capacity the present season. The Territory offers a large field for similar enterprises.

RAILROADS.

No less than heretofore the great want of the Territory is an increase and cheapening of the means of access to and exit from the Territory. While many miles nearer a railroad than last year, the actual cost of transportation has been little, if at all, lessened. Competition and the completion of more direct lines along the thirty-fifth and thirty-second parallels can alone secure to this Territory adequate facilities.

MINES AND MINING.

The produce of gold by the Moreno mines has steadily increased. The supply of water in the Moreno ditch has been greatly increased this year by its extension, so as to include new sources of supply. Some 300 inches is the present amount supplied to gulch miners, who are obtaining large returns.

The New Mexican Mining Company has suspended operations.

The discovery of extensive and rich leads of silver near the Gila River, and also near Fort Bayard, as well as in the northwestern portion of the Territory, affords promise of a large increase in the silver product.

The results of different mining enterprises of the Territory during the past year have in the aggregate been favorable, while a number have failed from a misdirection of means. Others have, by judicious management, given large returns, and proved beyond doubt that the mines of this Territory are susceptible of profitable working.

New discoveries have been made in every portion of the Territory of mines of gold, silver, and copper, and exploration is still continued. There is an immense field for capital in the proper development of hundreds of mineral lodes, and almost certain promise of large returns upon such investments.

The Aztec mine in the Moreno district still continues to yield quantities of gold-bearing rock. The yield of 1,000 tons of rock, crushed from January 21 to April 30, 1870, was \$75,760, giving a profit of \$62,000. This mine has been a source of wonder to all experts who have examined it. The ore is found in irregular deposits extending in all directions, and often entirely unconnected with each other.

The discovery of the mines in the Pyramid Mountains, about Ralston, and at the Cienaga, near Fort Bayard, has caused a large influx of miners from all parts. The first-named mines lie in the northern portion of the Pyramid Mountains, in latitude $32^{\circ} 19' 35''$ and longitude $108^{\circ} 44'$ west. These mountains have at no point an elevation of more than 1,000 feet above the surrounding plaza and almost level plain.

The mines are included in a district about five miles square, in which have been located 250 lodes, embracing 50 miles of locations. The general bearing of the ledges is west-northwest. A number of them can be traced from the eastern base of the mountain until they dip into the plain on the west side. The country rock is slate and granite, a majority of the veins being in slate. The ledges often rise to a height of 40 feet above the surface of the ground, and have a width of from 10 to 30 feet, the rock throughout containing from \$12 to \$60 of silver per ton.

There is scarcely a class of silver-bearing rock that is not found in this district. The extent of these ledges and the promising indications at the surface warrant the belief that they will develop into valuable and richly paying mines.

At the Cienaga, 10 miles west of Fort Bayard, deposits of carbonate of lead and oxide of iron, containing silver, are found in limestone rock. From the ease with which these ores can be reduced and the proximity of wood and water, there is no doubt of these mines proving to be of great value.

For information in reference to mines and mining I am especially indebted to mineral surveyor, R. B. Willison, whose statements are based upon personal inspection.

ACCOMPANYING DOCUMENTS.

The documents accompanying this report are—

A.—Statement of the amounts and condition of all deposits up to June 30, 1870, made by claimants for the execution of private surveys.

B.—Statement of expenditures on account of salaries during the fiscal year ending June 30, 1870.

C. Statement of expenditures on account of incidental expenses during the same period.

D.—Statement of public surveys executed during the year ending June 30, 1870.

E.—Estimates of appropriations required for the fiscal year ending June 30, 1872.

Very respectfully, your obedient servant,

T. RUSH SPENCER,
Surveyor General.

Hon. JOSEPH S. WILSON,
Commissioner of the General Land Office, Washington, D. C.

A.—*Private land and mineral claim survey deposits in account with the United States.*

DR.				CR.			
1866.				1866.			
Sept. 17	For cost of field work, Carey's deposit.....	\$703 91		Aug. 9	By Asa B. Carey, for survey of San Pedro and Cañon del Agua private land claims —field work	\$936 00	
Sept. 18	For amount refunded in excess of field work, Carey's de- posit.....	232 09		Aug. 9	By same, for same— office work.....	200 00	
1867.				1869.			
Jan. 5	For cost of office work, Carey's de- posit.....	197 35		May 31	By Lucien B. Max- well, for survey of Beaubien and Mi- randa private land claim—field work ..	5,000 00	
Jan. 24	For amount refunded in excess of office work, Carey's de- posit.....	2 65		May 31	By same, for same— office work	500 00	
1869.				June 18	By William Rosen- thal, for survey of Santa Rita del Co- bre mineral claim— notice.....	15 00	
Aug. 8	For cost of field work, Rosenthal's deposit.	30 00	\$1,136 00	June 18	By same, for same— field work.....	30 00	
Aug. 24	For cost of notice, Rosenthal's deposit.	15 00		June 17	By same, for same— office work.....	55 00	
Aug. 28	For cost of office work, Rosenthal's deposit	53 10					100 00
Aug. 28	For amount refunded in excess of office work, Rosenthal's deposit.....	1 90					
1870.			100 00				
Mar. 12	For amount refunded, field work, Max- well's deposit	5,000 00					
Mar. 12	For amount refunded, office work, Max- well's deposit	500 00					
			5,500 00				
			6,736 00				6,736 00

T. RUSH SPENCER,
Surveyor General.

SURVEYOR GENERAL'S OFFICE,
Santa Fé, New Mexico, August 20, 1870.

B.—Statement of expenditures in the office of the surveyor general of New Mexico for salaries during the fiscal year ending June 30, 1870.

Fiscal quarter.	Name.	Position.	Salary.	Time employed.		Amounts.
				From — inclusive.	To — inclusive.	
First	T. Rush Spencer	Surveyor general	\$3,000	July 1	Sept. 30	\$750 00
	David J. Miller	Chief clerk and translator.	2,000	July 1	Sept. 30	500 00
	Cyrus H. De Forrest.	Draughtsman	1,500	Aug. 21	Aug. 25	20 38
	T. Rush Spencer	Surveyor general	3,000	Oct. 1	Dec. 31	750 00
Second...	David J. Miller	Chief clerk and translator.	2,000	Oct. 1	Dec. 31	500 00
	Charles F. Helmle ..	Draughtsman	1,500	Oct. 18, 22	Nov. 11, 12	28 53
	Cyrus H. De Forrest.	do	1,500	Dec. 10	Dec. 31	81 52
	T. Rush Spencer	Surveyor general	3,000	Jan. 1	March 31	750 00
Third....	David J. Miller	Chief clerk and translator.	2,000	Jan. 1	March 31	500 00
	Cyrus H. De Forrest.	Draughtsman	1,500	Jan. 1	Jan. 31	129 16
	T. Rush Spencer	Surveyor general	3,000	April 1	June 30	750 00
Fourth ..	David J. Miller	Chief clerk and translator.	2,000	April 1	June 30	500 00
	Robert B. Willison ..	Draughtsman	1,500	April 21	June 4	185 44
	Total during fiscal year					5,445 03

T. RUSH SPENCER,
Surveyor General.SURVEYOR GENERAL'S OFFICE.
Santa Fé, New Mexico, August 20, 1870.

C.—Statement of incidental expenditures in the office of the surveyor general of New Mexico fiscal year ending June 30, 1870.

Fiscal quarter.	Name.	Consideration.	Time.		Amount.	Remarks.
			From — inclusive.	To — inclusive.		
First ..	T. Rush Spencer	Sundries			\$149 50	Per vouchers accompanying account.
	Luis Gold	Office rent	July 1	Sept. 30	100 00	
Second.	T. Rush Spencer	Sundries			192 50	Do.
	Luis Gold	Office rent	Oct. 1	Dec. 31	100 00	
Third...	T. Rush Spencer	Sundries			195 33	Do.
	Luis Gold	Office rent	Jan. 1	March 31	100 00	
Fourth.	T. Rush Spencer	Sundries			185 10	Do.
	C. D. Scofield	Repairs			76 66	
	Luis Gold	Office rent	April 1	June 30	100 00	
	Total during the fiscal year				1,199 09	

T. RUSH SPENCER,
Surveyor General.SURVEYOR GENERAL'S OFFICE.
Santa Fé, New Mexico, August 20, 1870.

D.—Statement of public surveys executed in the district of New Mexico during the year ending June 30, 1870.

Contract.		Surveyor.	Character of line.	Townships.	Ranges.	Miles surveyed.			Rate per mile.	Cost of survey.
No.	Date.					Ms.	chs.	Uks.		
35	June 23, 1869	R. B. Willison.	Second guide meridian east.	5, 6, 7, and 8 north.	19 and 20 east.	24	00	00	\$15	\$360 00
35	June 23, 1869	do.	First standard parallel north.	5, 6, 7, and 8 north.	20, 21, and 22 east.	18	00	00	15	270 00
35	June 23, 1869	do.	Extensors.	5, 6, 7, and 8 north.	20, 21, and 22 east.	126	08	35	12	1,513 00
35	June 23, 1869	do.	Connections with standard parallel corners.	7 north.	21 east.	00	03	27	10	599 64
35	June 23, 1869	do.	do.	7 north.	22 east.	59	77	12	10	601 33
35	June 23, 1869	do.	do.	8 north.	21 east.	60	10	63	10	603 02
35	June 23, 1869	do.	do.	8 north.	22 east.	60	24	19	10	604 00
35	June 23, 1869	do.	do.	9 north.	21 east.	60	31	97	10	600 07
35	June 23, 1869	do.	do.	9 north.	23 and 24 east.	12	00	00	15	180 00
37	Dec. 10, 1869	do.	First standard parallel north.	5 and 6 north.	23 east.	6	00	50	12	72 07
37	Dec. 10, 1869	do.	Extensors.	6 and 7 north.	23 east.	5	78	00	12	71 70
37	Dec. 10, 1869	do.	do.	7 and 8 north.	23 east.	5	77	54	12	71 63
37	Dec. 10, 1869	do.	do.	5 and 6 north.	24 east.	5	79	30	12	71 89
37	Dec. 10, 1869	do.	do.	6 and 7 north.	24 east.	5	78	40	12	71 76
37	Dec. 10, 1869	do.	do.	7 and 8 north.	24 east.	5	75	50	12	71 32
37	Dec. 10, 1869	do.	do.	5, 6, 7, and 8 north.	23 and 24 east.	24	05	70	12	288 85
37	Dec. 10, 1869	do.	do.	5, 6, 7, and 8 north.	24 and 25 east.	24	04	50	12	284 67
37	Dec. 10, 1869	do.	do.	5, 6, 7, and 8 north.	24 and 25 east.	00	14	44	10	1 88
37	Dec. 10, 1869	do.	Connections with standard parallel corners.	5 north.	24 east.	60	01	42	10	600 18
37	Dec. 10, 1869	do.	Subdivisional.	5 north.	23 east.	59	77	30	10	599 66
37	Dec. 10, 1869	do.	do.	6 north.	23 east.	59	77	37	10	599 67
37	Dec. 10, 1869	do.	do.	7 north.	23 east.	59	66	80	10	598 35
37	Dec. 10, 1869	do.	do.	8 north.	23 east.	60	43	67	10	605 46
37	Dec. 10, 1869	do.	do.	6 north.	22 east.	60	10	88	10	601 36
37	Dec. 10, 1869	do.	do.	6 north.	20 east.	59	70	32	10	598 81
37	Dec. 10, 1869	do.	do.	5 north.	21 east.	60	18	74	10	602 34
37	Dec. 10, 1869	do.	Total during the year.			1,045	56	68		11,147 23

T. RUSH SPENCER, Surveyor General.

SURVEYOR GENERAL'S OFFICE, Santa Fé, New Mexico, August 20, 1870.

E.—Estimates of the surveyor general of the appropriations required for the surveying service in New Mexico for the fiscal year ending June 30, 1872.

On salary account—	
For salary of surveyor general.....	\$3,000
For salary of chief clerk.....	2,000
For salary of translator and interpreter.....	2,000
For salary of computer of surveys.....	1,800
For salary of two draughtsmen, \$1,800 each.....	3,600
For salary of two clerks, \$1,750 each.....	3,500
	<hr/>
	\$15,900
On contingent account—	
For rent of office, stationery, fuel, messenger, &c.....	2,000
On surveying account—	
For public surveys, base, meridian, standard parallel, township, and subdivisinal lines.....	90,012
	<hr/>
	107,912
	<hr/>

T. RUSH SPENCER,
Surveyor General.

SURVEYOR GENERAL'S OFFICE,
Santa Fé, New Mexico, August 20, 1870.

No. 17 H.—Report of the surveyor general of Colorado.

SURVEYOR GENERAL'S OFFICE,
Denver, Colorado Territory, August 24, 1870.

SIR: I have the honor to submit the official operations of this office for the year ending June 30, 1870.

A.—Statement showing the surveys made during the year ending June 30, 1870, under the regular appropriation.

B.—Statement showing the surveys made under the act of Congress approved February 25, 1869, on the Vigil and St. Vrain grant.

C.—Statement containing the names and number of the mineral claims, together with the area, and amount deposited to pay for the same, surveyed under the act of Congress approved July 26, 1866.

D.—Statement containing the number of townships surveyed during the year ending June 30, 1870, and the area of public land contained in the same.

E.—Statement containing the amount of salaries paid the surveyor general and clerks for the year ending June 30, 1870, and incidental expenses of the office for the same period.

The labor of this office was largely increased by act of February 25, 1869, and also from a large increase of the application for mining surveys, and which still continue to increase.

The completion of two railroads in this Territory has caused a large increase of settlers, and the country is rapidly filling up. Several large colonies have been located in this Territory. The one at Greeley, about 52 miles north of Denver, is on the line of the Denver Pacific Railroad, where they have laid out a town, and have under cultivation a large amount of land. This colony consists of 500 members.

The German Colonization Association have located themselves in Wet Mountain Valley, in the southern portion of the Territory. They comprise about 300 persons. They have made quite a number of improvements, and still continue to do so.

The Territory of Colorado offers superior inducements to settlers, and, indeed, no portion of the United States can offer so fine a field for the agriculturist and grazer. Cattle, sheep, and horses graze over its fine pastures the whole year, requiring no food to be cured in summer for their sustenance in winter. The climate is delightful, summer and winter.

The counties of Park, Lake, and Summit comprise an area of at least 30,000 square miles, and are but little settled, the surface divisions of which are mountains, valleys, and parks, the North, Middle, and South Parks comprising the greater part of the eastern portion. They are divided by the Sierra Madre, the whole of Park and a portion of Lake Counties lying on the eastern slope. The mineral belt, as developed, will average 30 miles in width, and extends in a northeasterly direction. These counties are well watered by the South Platte and Arkansas Rivers, affluents to the Mississippi, and the Grande and Gunnison Rivers, affluents to the Colorado, on whose numerous tributaries are situated the principal gulch and placer mines. Dense forests of ever-

green timber cover a large portion of this country, making excellent lumber, as well as timber for building, mines, and other purposes, and being of vast importance for mining and manufacturing interests.

One of the most important resources of the valleys and parks is the superior pasturage of native grasses, which are estimated to cover one-half of the entire surface, and will furnish an abundance of excellent pasturage.

The agricultural portions are confined to valleys and parks, and are of sufficient extent to support a large and prosperous agricultural and mining population. All the grains and vegetables most useful in domestic economy are cultivated here with great success.

Hot and mineral springs are numerous, the hot springs in the Middle Park and Arkansas Valley attracting the most attention for their size and superior medical properties. The salt springs in the South Park, flowing from the surface of the ground, are capable of furnishing an unlimited amount of excellent salt, and, being situated in the midst of an extensive pastoral region, and in close proximity to the mineral belt, their value and importance to future interests of this section cannot be well over-rated. The placer mines of this district are distributed over a large extent of country, and are not surpassed in richness and extent by any in the Territory. With an abundance of water, and every natural facility for working, they will furnish an extensive and inexhaustible field for profitable enterprise for many years.

The Rocky Mountain coal field: Its western outcrops extend along the foot-hills, being nearly inverted and undulating under the great plains eastward. This fact has been established by the shaft at Leavenworth, in Kansas. Detached portions of this great coal field are found in the South Park, the Middle Park, and the San Luis Park. In the South Park it has been opened and developed, showing a seam of about 5 feet of fair coal. Seven seams have been discovered on the plains, ranging in thickness from 1 to 15 feet.

Eastward from Denver, and about 12 miles from its outcrop, on an anticlinal axis, a small shaft has been sunk, and at a depth of 116 feet a seam of coal of 4 feet in thickness, was found. Developments are being made and there is no doubt that the great plains have an unlimited quantity of fuel for ages. These deposits are estimated to cover an average of 30,000 square miles in this Territory alone, while the total area of the known or explored coal fields in the civilized world, independent of our American coal fields, is less than 20,000 square miles. Overlying these coal seams are fine beds of Leonite ore, from which a very fine iron could be made, and at no distant day must Colorado take her position as a great manufacturing State. Her great facilities must render her one of the most valuable sections of this great country; and no portion of the United States offers greater inducements for the manufacturer, miner, stock-raiser, and farmer than the Switzerland of America.

No efforts on a large scale have been made in the cultivation of trees. About 3,000 have been set out in the city of Denver, and are growing rapidly. They are chiefly cottonwood, and are of two varieties, distinguishable by the broad and narrow leaf. The box elder has been planted to some extent, and does very well. In relation to the tea culture, no efforts have been made to cultivate it, although I have no doubt in the southern part of the Territory it could be cultivated with success. Vegetables of all kinds develop to an extraordinary size, and no doubt at some day the beet will be cultivated for its sugar with great success.

For sheep, and wool-growing also, our opportunities are unequaled, and these mountains, both along their base and within their foot-hills and their valleys, are capable of being made one of the greatest wool-producing sections of the country, the cheapness with which it can be produced being equaled only by the fineness of its quality. Already much has been done in this branch of production, and during the present season over 2,000,000 pounds of wool have been shipped to eastern markets at a profit, and is an evidence of what will be done in the future.

The present season has been one of unexampled prosperity. The crop for 1870 is larger than for any preceding year, and, upon a careful estimate, will reach the following figures: Wheat, 675,000 bushels; corn, 600,000 bushels; oats and barley, 550,000 bushels; vegetables and potatoes, 500,000 bushels; which, with the hay and dairy product will have a market value of not less than \$3,500,000. The average yield of grain to the acre is far above that of the older States. Wheat can safely be placed at 30 bushels per acre, oats and barley at 35 bushels, corn at 30 bushels, and potatoes at 100 bushels.

The product of bullion will reach about \$4,000,000 during the year ending June 30, 1870, and I have no doubt will continue to increase largely. New developments and a reduced cost of treating ores must necessarily stimulate the production.

Hoping this may meet with your approval, I am, very respectfully, your obedient servant,

W. H. LESSIG,
Surveyor General of Colorado

Hon. JOS. S. WILSON,
Commissioner General Land Office, Washington, D. C.

A.—Statement of surveys made under the appropriation for the fiscal year ending June 30, 1870.

Number of contract.	Name of deputy.	Extent of survey.			Amount.	Remarks.
		<i>Ms.</i>	<i>chs.</i>	<i>Uks.</i>		
49	A. M. Fahringer.....	60	65	03	\$608 12	
64	E. L. Berthond.....	42	60	48	513 00	Meander lines.
65	A. M. Fahringer.....	24	22	20	264 00	Standard lines.
66	G. W. Jones.....	314	01	80	3,768 25	Exterior lines.
67	E. H. Kellogg.....	599	72	26	5,999 03	Section lines.
72	C. A. Dean.....	23	79	41	287 90	Exterior lines.
74	E. L. Berthond.....	119	77	82	1,199 90	Subdivision lines.
75	A. M. Fahringer.....	74	32	66	652 90	Exterior lines.
76	E. H. Kellogg.....	119	40	56	1,195 06	Subdivision lines.
83	F. F. Brune.....	480	24	87	4,813 10	Subdivision lines.
84	A. M. Fahringer.....	50	15	47	602 32	Exterior lines.
85	W. N. Byers.....	120	04	42	1,200 56	Subdivision lines.
86	A. M. Fahringer.....	61	04	76	610 58	Subdivision lines.
87	W. N. Byers.....	609	60	74	6,097 56	Subdivision lines.
96	A. M. Fahringer.....	24	02	98	288 45	Exterior lines.
		60	09	59	601 18	Subdivision lines.
		9	02	90	108 44	Exterior lines.
		60	03	87	600 48	Subdivision lines.

B.—Statement showing the surveys made under the appropriation of February 25, 1869, the amount paid clerks, and incidental expenses incident to said surveys.

Number of contract.	Name of deputy.	Extent of survey.			Cost.	Remarks.
		<i>Ms.</i>	<i>chs.</i>	<i>Uks.</i>		
60	George H. Hill.....	311	74	50	\$4,678 97	Standard lines.
61	William Ashley.....	514	66	65	6,178 00	Exterior lines.
62	R. Fisher.....	463	26	79	5,560 13	Exterior lines.
63	J. H. Martz.....	432	45	14	5,190 74	Exterior lines.
69	S. N. Adams.....	722	45	20	7,225 64	Section lines.
70	E. D. Bright.....	6	00	00	90 00	Standard lines.
		216	17	57	2,594 63	Exterior lines.
71	H. J. Stine.....	539	04	51	5,395 31	Section lines.
73	J. E. Clark.....	725	06	63	7,250 52	Section lines.
		54	00	00	810 00	Standard lines.
77	Sheldon & Archibald.....	107	37	06	1,289 55	Exterior lines.
79	William Scott.....	201	11	83	2,413 77	Exterior lines.
81	William Ashley.....	660	65	41	6,608 18	Section lines.
82	George H. Hill.....	734	41	43	7,345 15	Section lines.
86	G. V. M. Bontelle.....	508	41	47	5,085 20	Section lines.
87	C. A. Dean.....	358	19	63	3,582 45	Section lines.
88	Chilcott & Weston.....	252	41	74	3,124 40	Exterior lines.
89	J. E. Clark.....	238	24	63	2,383 08	Section lines.
90	J. H. Martz.....	120	19	74	1,202 46	Section lines.
		599	14	53	5,994 31	Section lines.
91	George H. Hill.....	12	20	56	147 08	Exterior lines.
92	William Ashley.....	366	09	58	3,661 58	Section lines.
93	A. W. Archibald.....	241	22	89	2,412 84	Section lines.
94	E. D. Bright.....	179	56	97	1,797 12	Section lines.
		24	1	11	288 16	Exterior lines.
95	R. Fisher.....	660	62	57	6,607 82	Section lines.
		179	49	25	1,796 15	Section lines.
	Total.....				100,713 24	

Amount paid clerks..... \$4,129 22
 Incidental expenses..... 110 00

C.—Statement showing the survey of the mineral claims under the act of July 26, 1806, together with the amount deposited for surveying the same.

No.	Name of lode.	No. of mineral district.	Mining district.	County.	Township.	Area in acres.	Date of approval.	Character of lode.	Amount deposited for field work.	Amount deposited for office work.
51	Symond's Fork	1	Nevada	Gilpin	3 south, range 73 west.	.57	July 24, 1869	Gold	\$60 00	\$37 50
52	Lynan	1	do	do	3 south, range 73 west.	1.703	Sept. 10, 1869	Gold and silver	45 00	37 50
53	Granite	1	Gregory	do	3 south, range 73 west.	1.981	Sept. 16, 1869	Gold and silver	50 00	37 50
54	Briggs	1	do	do	3 south, range 73 west.	.903	Sept. 17, 1869	Gold and silver	40 00	37 50
55	Gregory Extension	1	do	do	3 south, range 73 west.	.344	Sept. 17, 1869	Gold and silver	40 00	37 50
56	Mountain City	1	do	do	3 south, range 73 west.	.941	Sept. 20, 1869	Gold, silver, and copper	50 00	22 50
57	Baxter & Crispin	1	Central City	do	3 south, range 73 west.	1.867	Sept. 28, 1869	Gold, silver, and copper	40 00	22 50
58	Gardiner	1	Illinois Central	do	3 south, range 73 west.	1.841	Sept. 30, 1869	Gold, silver, and copper	50 00	16 00
59	Big Thunder	1	do	do	3 south, range 73 west.	3.270	Nov. 29, 1869	Gold, silver, and copper	40 00	16 00
60	Mat France	1	do	do	3 south, range 73 west.	2.984	Nov. 29, 1869	Gold, silver, and copper	40 00	16 00
61	Payable No. 3	1	Russell	do	3 south, range 73 west.	1.377	Dec. 21, 1869	Gold, silver, and copper	40 00	16 00
62	Old Ballion	1	Gregory	do	3 south, range 73 west.	1.147	Dec. 21, 1869	Gold, silver, and copper	40 00	16 00
63	East Boston	1	Central City	do	3 south, range 73 west.	1.834	Jan. 12, 1870	Gold, silver, and copper	40 00	16 00
64	Tieney	1	Gregory	do	3 south, range 73 west.	1.493	Jan. 13, 1870	Gold, silver, and copper	40 00	16 00
65	Flack	1	Nevada	do	3 south, range 73 west.	.339	March 29, 1870	Gold and silver	50 00	16 00
66	Gardner	1	do	do	3 south, range 73 west.	1.189	March 29, 1870	Gold and silver	40 00	16 00
67	Kansas	1	do	do	3 south, range 73 west.	.114	May 18, 1870	Gold and silver	40 00	16 00
68	Indiana	1	do	do	3 south, range 73 west.	.229	May 27, 1870	Gold and silver	60 00	16 00
69	Douglas	1	do	do	3 south, range 73 west.	1.995	May 27, 1870	Gold and silver	60 00	16 00
70	Gibson	1	Illinois Central	do	3 south, range 73 west.	1.777	June 16, 1870	Gold and silver	40 00	16 00
71	Gunnel	1	Eureka	do	3 south, range 73 west.	.54	June 16, 1870	Gold and silver	40 00	16 00
72	Bates	1	Gregory	do	3 south, range 73 west.	.344	June 16, 1870	Gold and silver	40 00	16 00
73	Kip	1	do	do	3 south, range 73 west.	.949	June 16, 1870	Gold and silver	40 00	16 00
74	Crystal	1	Idaho	Clear Creek	3 south, range 73 west.	.803	Sept. 22, 1869	Gold and silver	30 00	22 50
75	Water Power	2	Jackson	do	3 south, range 73 west.	9.3	Sept. 22, 1869	Silver	20 00	22 50
76	Hulth	2	Argentine	do	Unsurveyed	1.84	Oct. 9, 1869	Silver	80 00	16 00
77	Baker	2	do	do	Unsurveyed	1.84	Oct. 20, 1869	Silver	80 00	16 00
78	Mill Site	2	do	do	Unsurveyed	1.72	Oct. 20, 1869	Silver	80 00	16 00
79	Veto	2	Idaho	do	Township 3 south, range 73	.8	Nov. 10, 1869	Silver	60 00	16 00
80	Comet	2	Idaho	do	Unsurveyed	5.8	Nov. 29, 1869	Silver	75 00	16 00
81	Mill Site	2	Griffith	do	Unsurveyed	15	Nov. 29, 1869	Silver	60 00	16 00
82	Cashier	2	do	do	Unsurveyed	8	Dec. 3, 1869	Silver	60 00	16 00
83	Silver Plume	2	do	do	Unsurveyed	1.6	Nov. 29, 1869	Silver	50 00	16 00
84	Combs	2	do	do	Unsurveyed	1.6	Dec. 28, 1869	Silver	50 00	16 00
85	Bush	2	do	do	4 south, range 75 west.	1.6	Dec. 28, 1869	Silver	50 00	16 00
86	Rainbow	2	do	do	4 south, range 75 west.	3.7	Feb. 1, 1870	Silver	50 00	16 00
87	Eagle Bird	2	do	do	4 south, range 75 west.	1.45	April 29, 1870	Silver	50 00	16 00
88	French Flag	2	Idaho	do	4 south, range 73 west.	1.6	May 10, 1870	Silver	65 00	16 00
89	Washington	2	do	do	3 south, range 73 west.	.8	May 25, 1870	Silver and gold	60 00	16 00
90	Wells	3	Bucksin Joe	do	Unsurveyed	122.18	Oct. 9, 1869	Gold, silver, and copper	120 00	22 50
91	Excelsior	3	do	do	Unsurveyed	.52	Dec. 2, 1870	Gold, silver, and copper	50 00	16 00
92	Claim	3	Montgomery	do	Unsurveyed	7.29	May 2, 1870	Gold, silver, and copper	80 00	16 00
93	Andes	3	do	do	Unsurveyed	8.08	May 2, 1870	Gold, silver, and copper	100 00	16 00
94	Parsonage	3	do	do	Unsurveyed				2,275 00	834 50

D.—Statement showing the number of townships surveyed during the year ending June 30, 1870, and the area of public land contained in the same.

DESCRIPTION.

Township.	Range.	Area.	Township.	Range.	Area.
30 south	64 west	23, 024. 04	24 south	59 west	23, 056. 24
22 south	59 west	14, 582. 74	25 south	59 west	23, 004. 95
22 south	58 west	10, 828. 24	23 south	59 west	22, 012. 02
24 south	53 west	22, 946. 45	27 south	58 west	22, 891. 12
33 south	63 west	22, 760. 12	24 south	52 west	23, 123. 33
24 south	66 west	23, 027. 78	25 south	53 west	22, 984. 01
26 south	71 west	22, 690. 36	33 south	64 west	22, 978. 22
28 south	66 west	23, 116. 04	23 south	63 west	22, 979. 47
24 south	62 west	22, 886. 47	34 south	61 west	23, 109. 51
23 south	57 west	23, 009. 29	22 south	63 west	23, 178. 83
26 south	54 west	23, 949. 22	25 south	63 west	22, 998. 37
30 south	65 west	23, 072. 46	22 south	62 west	22, 968. 63
30 south	62 west	23, 064. 67	29 south	65 west	23, 078. 93
21 south	60 west	1, 250. 57	22 south	61 west	23, 051. 01
25 south	62 west	23, 025. 03	30 south	66 west	23, 053. 93
24 south	64 west	22, 944. 02	26 south	67 west	23, 083. 70
29 south	62 west	23, 073. 79	29 south	66 west	23, 096. 13
21 south	62 west	12, 928. 49	28 south	65 west	23, 081. 02
34 south	59 west	23, 054. 67	32 south	62 west	23, 145. 97
26 south	69 west	22, 102. 52	32 south	63 west	22, 976. 75
26 south	70 west	22, 361. 13	21 south	61 west	11, 393. 60
26 south	57 west	23, 017. 31	23 south	62 west	22, 869. 53
26 south	53 west	23, 986. 97	25 south	61 west	22, 954. 83
23 south	66 west	23, 076. 37	24 south	63 west	22, 981. 99
23 south	67 west	23, 106. 32	22 south	64 west	23, 009. 16
25 south	67 west	23, 065. 04	23 south	64 west	22, 982. 04
24 south	67 west	23, 115. 58	31 south	63 west	22, 997. 22
29 south	60 west	23, 063. 71	32 south	61 west	22, 846. 89
29 south	61 west	22, 989. 59	31 south	64 west	23, 015. 63
28 south	61 west	22, 729. 67	32 south	64 west	23, 011. 52
25 south	54 west	23, 146. 00	33 south	62 west	23, 159. 38
25 south	52 west	23, 078. 63	30 south	61 west	23, 030. 31
26 south	58 west	23, 411. 69	34 south	60 west	23, 087. 02
27 south	61 west	23, 170. 61	34 south	62 west	23, 031. 88
26 south	66 west	23, 102. 29	10 south	62 west	23, 075. 23
26 south	65 west	23, 272. 79	11 south	62 west	23, 038. 99
25 south	65 west	22, 980. 32	12 north	62 west	23, 104. 69
27 south	67 west	23, 068. 37	1 north	60 west	23, 032. 32
24 south	65 west	23, 013. 59	11 south	69 west	23, 096. 15
27 south	65 west	23, 032. 27	10 south	69 west	23, 053. 60
27 south	66 west	23, 054. 56	4 north	61 west	23, 150. 67
25 south	64 west	23, 049. 76	4 north	60 west	23, 178. 93
25 south	66 west	23, 007. 11	4 north	59 west	23, 190. 61
26 south	64 west	23, 076. 84	1 north	79 west	23, 105. 19
27 south	64 west	23, 030. 74	3 north	59 west	23, 038. 28
23 south	56 west	14, 951. 60	10 south	69 west	23, 053. 60
34 south	65 west	22, 948. 98	5 south	72 west	22, 908. 93
33 south	65 west	22, 985. 18	1 south	72 west	22, 969. 86
24 south	55 west	22, 208. 52	9 north	62 west	23, 049. 91
23 south	55 west	1, 423. 85	4 north	58 west	23, 187. 99
23 south	51 west	20, 231. 41	5 north	61 west	23, 027. 68
25 south	57 west	23, 015. 09	5 north	60 west	23, 028. 56
24 south	56 west	23, 044. 96	5 north	58 west	23, 078. 78
34 south	66 west	22, 973. 86	2 north	60 west	22, 996. 83
21 south	64 west	22, 839. 09	3 north	60 west	22, 947. 87
23 south	53 west	16, 486. 14	1 north	59 west	23, 047. 95
27 south	70 west	23, 092. 12	2 north	59 west	23, 054. 57
27 south	71 west	23, 067. 15	44 north	8 east	23, 030. 14
23 south	65 west	23, 033. 48	44 north	7 east	23, 039. 20
31 south	62 west	23, 413. 74	4 north	57 west	23, 245. 00
22 south	57 west	5, 836. 47	10 north	63 west	23, 079. 56
28 south	67 west	22, 946. 94	5 north	63 west	23, 015. 91
31 south	67 west	23, 042. 02	2 north	61 west	22, 944. 15
29 south	67 west	22, 948. 41	3 north	61 west	23, 000. 93
32 south	65 west	23, 029. 86	5 north	59 west	23, 008. 29
31 south	65 west	23, 244. 18	12 north	63 west	23, 038. 62
31 south	66 west	22, 977. 83	9 north	63 west	23, 071. 50
33 south	61 west	22, 926. 51	11 north	63 west	23, 073. 67
33 south	59 west	23, 091. 95	5 north	62 west	23, 059. 72
31 south	59 west	23, 010. 13	2 north	62 west	23, 071. 32
29 south	58 west	22, 859. 89	12 south	67 west	23, 074. 14
30 south	58 west	23, 030. 11	5 south	71 west	23, 772. 34
24 south	57 west	23, 000. 95	11 south	67 west	23, 134. 07
23 south	52 west	20, 699. 31	21 south	63 west	900. 09
30 south	63 west	23, 060. 81	21 south	62 west	4, 138. 90
27 south	69 west	23, 002. 63	21 south	61 west	11, 987. 28
27 south	68 west	23, 095. 93	21 south	60 west	883. 07
27 south	60 west	23, 198. 89	20 south	63 west	22, 466. 23
25 south	60 west	23, 001. 85	20 south	64 west	22, 700. 07
26 south	60 west	23, 580. 45	12 north	66 west	23, 113. 51
24 south	54 west	23, 012. 48	12 north	65 west	22, 998. 46
23 south	54 west	6, 845. 34	12 north	69 west	23, 215. 43

Surveyed in 1869.....	3,565,104.27
Previously reported.....	3,926,176.41
Total of acres surveyed in Colorado.....	7,495,280.68

E.—Statement showing the amount paid surveyor general and clerks for the fiscal year ending June 30, 1870; also incidental expenses for same period.

Name.	Occupation.	Nativity.	Whence appointed.	Time of service.	Amount paid.
W. H. Lessig.....	Surveyor general..	Pennsylvania.	Pennsylvania.	Entire year.....	\$3,000 00
E. M. Ashley.....	Chief clerk.....	Ohio.....	Colorado.....	Entire year.....	1,800 00
G. V. M. Boutelle.....	Draughtsman.....	New York.....	Colorado.....	3 months.....	375 00
H. L. Thayer.....	Draughtsman.....	Michigan.....	Colorado.....	2 months 9 days.....	285 21
J. H. Bousall.....	Draughtsman.....	Pennsylvania.	Pennsylvania.	6 months.....	750 00
E. W. Cobb.....	Transcribing clerk	New York.....	Colorado.....	6 months.....	750 00
H. L. Thayer.....	Transcribing clerk	Michigan.....	Colorado.....	3 months.....	375 00
Total.....					7,335 21

Incidental expenses.

Expended for first quarter.....	\$473 84
Expended for second quarter.....	583 94
Expended for third quarter.....	466 44
Expended for fourth quarter.....	387 64
Total incidental expenses.....	1,911 86

SURVEYOR GENERAL'S OFFICE,
Denver, August 24, 1870.

SIR: In compliance with your letter of March 30, 1870, I have the honor to submit the following report:

	Acres.	Bushels.
Wheat.....	22,750	675,000
Oats.....	12,571	440,000
Barley.....	3,142	110,000
Corn.....	20,000	600,000
Potatoes and vegetables.....	5,000	500,000

Coin value of mineral produce of the Territory for the year ending June 30, 1870.....	\$2,500,187
Coin value of improvements.....	6,102,460
Coin value of capital employed.....	2,362,660
Cost of mining and delivering on the surface.....	\$4 00 per ton.
Hauling.....	1 25 per ton.
Milling.....	2 50 per ton.
Making a total of.....	7 75 per ton.

These amounts are only from the three mineral districts, and do not include the estimates of the placer mines, at which I have no means of arriving, but which cannot be far from \$1,500,000 during the year. These statistics are all that could be obtained in the time given me over an extent of country so vast.

Hoping this may meet with your approval, I am, very respectfully,

W. H. LESSIG,
Surveyor General of Colorado.

Hon. JOS. S. WILSON,
Commissioner General Land Office, Washington, D. C.

No. 17 K.—*Report of the surveyor general of Montana.*

SURVEYOR GENERAL'S OFFICE,
Helena, Montana, July 20, 1870.

SIR: I have the honor to transmit herewith, in duplicate, the usual annual report and accompanying statements, to wit:

A.—Showing condition of appropriation for the surveys of the public lands in Montana for the fiscal year ending June 30, 1870.

B.—Showing amount of deposits made for field and office work, and the publication of notice in cases of mineral claims.

C.—Showing list of lands surveyed in Montana since June 30, 1869.

D.—Showing condition of surveys contracted for by surveyor general of Montana, under appropriation by Congress, for the fiscal year ending June 30, 1870.

E.—Showing condition of contracts for mineral surveys.

F.—Showing the number of township plats, descriptive lists of land and corners furnished to Helena land office since June 30, 1869.

G.—Showing condition of appropriation for clerks in surveyor general's office for fiscal year.

H.—Showing condition of appropriation for salary of surveyor general for fiscal year.

I.—Showing condition of the appropriation for incidental expenses of the surveyor general's office for the fiscal year.

SURVEYS.

The public surveys in this district during the past year have been prosecuted to the fullest extent of the appropriation.

The principal meridian has been extended south through townships 8, 9, 10, 11, 12, 13, and 14, to the south boundary of the Territory.

The second standard parallel south has been extended east through range 1 and west through ranges 1, 2, 3, and 4. A guide meridian has been run north from the second standard parallel south, through townships 10, 9, 8, 7, 6, and 5 south, between ranges 4 and 5 west.

Also a guide meridian from first standard parallel south north through townships 5, 4, 3, 2, and 1 south, and 1 and 2 north, between ranges 5 and 6 west.

These lines open up the valleys of the Madison, Stinking Water, Jefferson, Big Hole, and Beaver Head.

A guide meridian has been run north from township 11 north, range 4 west, through townships 12, 13, 14, 15, 16, 17, 18, 19, and 20 north, between ranges 3 and 4 west.

The fifth standard parallel has been run east through ranges 3, 2, and 1 west, and 1 and 2 east, between townships 20 and 21 north.

The principal meridian has been run through townships 21 and 22 north, and south through township 20 north.

This guide meridian and the extension of the fifth standard parallel opens up to survey the Sun, Dearborn, and Lower Missouri Valleys.

The third standard parallel north has been extended over the main range of the Rocky Mountains, by meandering the Hell Gate Cañon, and has been established through ranges 19 and 20 west. A guide meridian has been run south between ranges 19 and 20 west, through townships 12, 11, 10, and 9 north. The second standard parallel north has been run through ranges 19 and 20 west. The third standard, connected by the guide meridian to the second standard, opens up the Hell Gate, Ronde, Bitter Root, and Missoula Valleys.

In addition to these standard lines 30 townships, in the different valleys, have been subdivided and returns made of the same to General Land Office and proper plats and descriptive lists filed in district land office.

THE TERRITORY.

I am led to differ somewhat with my predecessor as to the various classes of land in our Territory. From the best information I can get I would place the agricultural land at 16,500,000 acres; grazing land at 38,500,000; timber, 11,500,300; mineral, 5,200,000; mountain and worthless, 20,316,340.

The Rocky Mountains, above latitude 45° 30', divide, the Bitter Root passing to the west and northwest, while the other branch to the east and northeast.

The eastern or main range between the Snake River and Missouri has a high altitude, and from near the source of the Jefferson makes a great bend to the east, returning again to the west, making nearly a semicircle, from which flow the head-waters of the Columbia, and forming the great western basin of Montana. This basin comprises eight beautiful valleys—the Deer Lodge, Blackfoot, Bitter Root, and Flat Head being the largest and most available. These valleys are celebrated for their agricultural

productions and the mildness of their climate; tomatoes and melons being grown in the open air; strawberries, gooseberries, raspberries, and currants growing wild, while wheat, oats, barley, rye, and potatoes produce abundantly.

The western basin is better supplied with timber than the rest of the Territory, producing the finest kind of pine, fir, cedar, and spruce.

Nearly east, across the range from this basin, is the corresponding one of the Upper Missouri, formed by the Wisdom, Beaver Head, Stinking Water, Jefferson, Madison, the two Gallatins, and the Prickly Pear, running down from the mountains until driven together at or near "The Gate of the Mountains." These valleys are unequaled for the production of grains and grasses, and the richness of their soil.

These two basins contain nearly all the present fixed population of our Territory.

While to the north of us the valleys of the Sun, Teton, Marias, and Missouri Rivers offer the finest of grazing land, whenever the red man allows it to be settled.

The Judith Basin, Muscleshell, and Yellowstone Valleys are famed as equal to any others in the Territory, but can only be spoken of as a rumor, the Indian holding undisputed sway.

With our winters tempered, as they are, by isothermal laws not yet understood, our Territory must soon be the great stock-growing region of America. An abundance of good water, pure air, and nature's wild grass, unequaled by the best of timothy or blue grass, furnishing not only sustenance during the summer, but food through the winter, are advantages combined that are found nowhere else.

While our valleys and mountains are thus adapted to grazing, the valleys surpass most lands in the abundance of their yield. Wherever water can be had for irrigation there is no trouble in raising 35 or 40 bushels of wheat, 50 bushels of oats, or 40 bushels of barley to the acre; and our crops of potatoes, carrots, beets, and cabbages have but few equals.

The grasshoppers, that at one time threatened destruction to our interests, have nearly all disappeared, and, hopes are entertained, never to return.

COAL.

Discoveries of a fair quality of bituminous coal have been made at Benton and Warner's Ranch and on the Dearborn and Big Hole Rivers, and in the Mullen and Bozeman Passes, leading me to believe that an abundance exists for all the purposes needed in the Territory. Brown lignite abounds, but as yet has not been made available for any practicable use.

TIN.

Tin has been discovered in various places on the surface, but none in large quantities; but the extent of territory over which it is found scattered leads to the belief that it will yet be discovered in paying quantities.

SILVER.

The silver lodes have not proved as paying as hoped. The difficulty in smelting the ores, want of proper furnaces and skilled labor are the great drawbacks. The richness of the ore is beyond doubt.

GOLD.

The old placer mines have been yielding steadily, while new diggings have been struck in several places. The great stampede to Cedar Creek last winter proved disastrous to most of those who ventured. The deep snow of winter, and consequent high water of the spring and summer, prevented much work, but at present writing Cedar promises to make a good fall and winter camp. Most of the placer mines now being worked have cost their owners large sums to furnish them the needed water. The county of Deer Lodge alone has 323 miles of ditch, with a capacity of 23,050 inches, miner's measure, built at a cost of \$590,500; Beaver Head County, 54 miles, at a cost of \$100,000; Meagher County, 66 miles, at a cost of \$373,000; Madison County, 94 miles, at a cost of \$93,600; Lewis and Clarke County, 111 miles, at a cost of \$2,196,500.

A company is now at work constructing a ditch, to bring water upon the mines around Helena, 60 miles in length, at a cost of about \$75,000, the water to be brought in the present season.

The yield of gold for the Territory the present season will be about \$12,000,000, one-third of this amount being furnished by Deer Lodge County.

QUARTZ.

During the early years of our Territory speculation in quartz ran wild, and lodes were staked, specimens produced, and claims sold, where now no vestige of them remains.

Many companies were formed, large amounts expended for mills and fixtures before developing their mines, and, as a natural consequence, owners found their mills located without judgment, and often far from paying quartz; a loss, not only of capital, but of confidence in our mineral wealth followed, and general distrust of all quartz interest. A few more judicious owners commenced at the right place, demonstrated the value of their mines before investing large amounts for mills, and, as a natural consequence, have made good paying and permanent investments.

During the last year the quartz interest of Montana has been materially improving. Patents have been issued for ten claims under the mineral act.

PERMANENT SETTLEMENT.

The whole appropriations for surveys in the Territory for the last year were \$33,000 There have been 440 preëmptions made, paying to the treasury of the United States \$88,000, in addition to 213 homesteads of almost equal value to the Government.

Nowhere is such an abundant return made for labor as in Montana; our vast grazing lands offer inducements found nowhere else; our valleys, under a fostering hand, produce equal to any land; while our mining population close to these valleys offers a ready and profitable market.

No wonder, then, that in five or six years 25,000 inhabitants have found homes almost in the heart of the Rocky Mountains, and it needs no stretch of imagination to see that, ere a score of years shall pass away, a mighty State will be found, where twenty years before naught was seen except the red man of the forest, with his vast but untamed herds of deer, antelope, and buffalo, even now slowly and surely disappearing—red man and buffalo—before the march of civilization.

I am, very respectfully, your obedient servant,

H. D. WASHBURN,
Surveyor General.

Hon. JOSEPH S. WILSON,
Commissioner General Land Office, Washington, D. C.

A.—Statement of the condition of appropriation for surveys of public land in Montana for the fiscal year ending June 30, 1870.

No. of contract.	Date of account.		Amount.	Date.		Amount.
	1869.					
	July 1	To balance.....	\$349 66	1869.		
17	Oct. 21	To B. F. and G. F. Marsh.....	2,567 20	July 1....	By appropriation.....	\$25,000 00
18	Nov. 10	To Walter W. Johnson.....	600 03			
17	Nov. 17	To B. F. and G. F. Marsh.....	5,578 06	1870.		
20	Nov. 18	To Wm. T. McFarland.....	832 08	June 30.	By balance.....	271 98
20	Nov. 27	To Wm. T. McFarland.....	742 56			
18	Nov. 27	To Walter W. Johnson.....	2,775 34			
	1870.					
17	Jan. 12	To B. F. and G. F. Marsh.....	124 85			
21	Jan. 12	To Daniel L. Griffith.....	1,614 97			
18	Feb. 13	To W. W. Johnson.....	43 02			
20	Jan. 31	To Wm. T. McFarland.....	1,382 18			
19	Feb. 19	To John L. Corbett.....	3,051 54			
23	June 25	To Seymour Nebeker.....	1,472 14			
20	June 30	To Wm. T. McFarland.....	686 47			
22	July 30	To W. W. Johnson.....	1,173 98			
19	Aug. 3	To J. L. Corbett.....	2,277 90			
			25,271 98			25,271 98

B.—Statement showing the amount of deposits for field and office work and publication of notice under act of Congress, July 26, 1866, during the fiscal year ending June 30, 1870.

Office-work—Amount of deposit made during the year.....	\$75 00
Field-work—Amount of deposit made during the year.....	30 00
Publication of notice—Amount of deposit made during the year.....	30 00
	<u>135 00</u>

C.—A list of lands surveyed in Montana for the fiscal year ending June 30, 1870.

No. of townships surveyed.	Township.	Range.	Public land.	A.	B.	C.	Remarks.	Total.
				Military reservation.	Unsurveyed mountain land.	Unsurveyed public land.		
			<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>		<i>Acres.</i>
1	1 north...	6 east...	3,992.28		19,047.72			23,040.00
2	21 north...	1 east...	23,060.84					23,060.84
3	21 north...	2 east...	23,048.00					23,048.00
4	22 north...	1 east...	22,982.76					22,982.76
5	22 north...	2 east...	23,006.63					23,006.63
6	21 north...	1 west...	20,825.95	2,195.86			Fort Shaw mil. res.	23,021.81
7	21 north...	2 west...	21,430.08	1,607.81			Fort Shaw mil. res.	23,037.89
8	21 north...	3 west...	23,019.92					23,019.92
9	22 north...	1 west...	22,984.94					22,984.94
10	22 north...	2 west...	23,022.59					23,022.59
11	4 north...	10 west...	20,242.55		2,560.00			22,802.55
12	5 north...	9 west...	23,031.81					23,031.81
13	6 north...	9 west...	23,048.23					23,048.23
14	10 north...	13 west...	23,029.42					23,029.42
15	1 north...	5 west...	22,980.31					22,980.31
16	3 south...	6 west...	20,826.53		2,213.47			23,040.00
17	4 south...	6 west...	23,174.11					23,074.11
18	5 south...	6 west...	22,994.67					22,994.67
19	10 south...	1 west...	22,436.43					22,436.43
20	11 south...	2 west...	20,406.15			827.49	River	21,233.64
21	4 south...	5 west...	23,031.52					23,031.52
22	5 south...	5 west...	14,068.93		8,971.07			23,040.00
23	6 south...	1 west...	22,888.62					22,888.62
24	7 south...	1 west...	23,000.61					23,000.61
25	8 south...	1 east...	12,036.06		11,003.94			23,040.00
26	9 south...	1 east...	11,819.13		11,220.87			23,040.00
27	1 south...	6 west...	17,693.42		5,346.58			23,040.00
28	2 south...	6 west...	6,244.96		16,795.04			23,040.00
29	2 north...	5 west...	16,006.68		7,033.32			23,040.00
30	2 north...	4 west...	21,001.34		2,038.66			23,040.00
			596,335.47	3,803.67	86,230.69	827.49		687,197.30

D.--Statement showing condition of surveys contracted by United States surveyor general of Montana under appropriations by Congress for the fiscal year ending June 30, 1870.

Contract.		Character and location of work.	Name of deputy.	Amount of contract.
No.	Date.			
*17	1869. June 4. . . .	A guide meridian north from the corner to townships 11 and 12 north, ranges 3 and 4 west, through townships 12, 13, 14, 15, 16, 17, 18, 19, and 20 north, to the fifth standard parallel north; the fifth standard parallel north through ranges 1, 2, and 3 west and 1 and 2 east; the principal meridian from the fifth standard parallel north, through townships 21 and 22 north and south, through township 20 north; the exterior boundaries and subdivisional lines of township 1 north, range 6 east, townships 21 and 22 north, ranges 1 and 2 east, township 21 north, ranges 1, 2, and 3 west, and of township 22 north, ranges 1 and 2 west, principal meridian.	Benjamin F. and Geo. F. Marsh.	\$8,270 11
*18	Aug. 18 . . .	The second standard parallel northwest, 6 miles through range 10 west, starting from the Deer Lodge guide meridian; exterior boundaries of townships 4, 7, 8, and 9 north, range 10 west; extend township lines through ranges 11, 12, and 13 west, between townships 9 and 10 north; exterior boundaries of township 10 north, range 13 west; township line through range 14 west, between townships 10 and 11 north; also subdivisional lines of township 4 north, range 10 west, and of townships 5 and 6 north, of range 9 west, and of township 10 north of range 13 west, principal meridian.	Walter W. Johnson. . .	3,418 39
*19	Aug. 20 . . .	An extension of the principal meridian to the south boundary of the Territory; the second standard parallel through ranges 1, 2, 3, and 4 west; a guide meridian north through townships 1, 2, 3, and 4 south through ranges 5 and 6 west; a guide meridian north through townships 6, 7, 8, 9, and 10 south through ranges 4 and 5 west; second standard parallel through range 1 east; exterior boundaries of township 4 south, range 4 west; exteriors of townships 6, 7, 8, 9, and 10 south, range 1 west; exteriors of townships 9 and 10 south, range 1 east, which exteriors will be fractional; the subdivisional lines in townships 4 and 5 south, range 4 west, (fractional,) townships 6 and 7 south, range 1 west, townships 9 and 10 south, range 1 east, (fractional.)	John L. Corbett	5,329 44
*20	Aug. 24 . . .	Extension of the Jefferson guide meridian (under contract with Deputy John L. Corbett) from the standard corner to townships 5 and 6 north, on base line 6 miles; the exterior and subdivisional lines of township 1 north, range 5 west, townships 1, 2, 3, 4, and 5 south, range 6 west, townships 1, 2, and 3 south, range 6 west, fractional.	William T. McFarland	3,643 29
21	Aug. 30 . . .	Subdivisional lines and meanders of the Missouri River in township 10 north, range 1 west, township 11 north, range 2 west of the principal meridian.	Daniel L. Griffith	1,614 9
*22	1870. Feb. 25. . . .	Exterior boundaries of township 11 north, ranges 14, 15, 16, and 17 west, township 12 north, ranges 17, 18, and 19 west; third standard parallel through ranges 18, 19, and 20 west; a guide meridian south through the Bitter Root Valley, say between ranges 19 and 20 west, through townships 12, 11, 10, and 9 north; second standard parallel across Bitter Root Valley, say through ranges 19 and 20 west of the principal meridian.	Walter W. Johnson. . .	1,173 90
*23	March 15 .	Extension of the Jefferson guide meridian north, through township 2 north, through ranges 5 and 6 west; exterior boundaries of township 1 north, range 4 west, township 2 north, range 4 west and 5 west; subdivisional lines of fractional township 2 north, ranges 4 and 5 west of the principal meridian.	Seymour Nebeker	1,472 14
				24,922 32

* Completed

E.—Statement showing condition of contracts made for survey of mineral lands in Montana, under act of Congress July 26, 1866, during the fiscal year ending June 30, 1870.

Contract.		Name of deputy.	No. of district.	Extent of district.	No. of final surveys made.
No.	Date.				
4	Feb. 28, 1868	George B. Foote.....	2	Counties of Lewis and Clarke, Jefferson, Meagher, Choteau, Deer Lodge, and Missoula.	3

F.—Statement showing the description of land for which township plats and descriptive lists have been furnished the Helena land district, Helena, Montana, during the fiscal year ending June 30, 1870.

Township.	Range.	Area.	Triplicate plats—when transmitted.	Descriptive plats—when transmitted.
7 north	2 east	22,664.01	September 18, 1869	September 18, 1869.
2 north	2 east	22,680.81	September 18, 1869	September 18, 1869.
6 north	2 east	22,457.21	September 21, 1869	September 21, 1869.
2 north	4 east	12,843.10	September 29, 1869	September 29, 1869.
2 south	6 east	14,753.55	September 29, 1869	September 29, 1869.
3 south	4 east	22,929.19	October 5, 1869	October 5, 1869.
2 south	1 east	22,955.65	October 7, 1869	October 7, 1869.
3 south	1 east	23,005.91	October 8, 1869	October 8, 1869.
1 south	2 east	22,850.53	October 16, 1869	October 16, 1869.
7 north	1 east	23,012.36	October 18, 1869	October 18, 1869.
21 north	2 east	23,048.00	October 23, 1869	October 23, 1869.
9 north	1 east	22,258.26	October 23, 1869	October 23, 1869.
8 north	1 east	21,352.54	October 26, 1869	October 26, 1869.
1 south	1 east	22,908.43	October 30, 1869	October 30, 1869.
2 south	1 east	23,005.12	October 30, 1869	October 30, 1869.
3 south	1 east	23,043.75	October 30, 1869	October 30, 1869.
2 south	3 east	22,879.72	November 2, 1869	November 2, 1869.
5 north	9 east	23,031.81	November 13, 1869	November 13, 1869.
21 north	1 east	20,825.95	November 19, 1869	November 19, 1869.
21 north	2 east	21,430.08	November 19, 1869	November 19, 1869.
21 north	3 east	23,019.82	November 19, 1869	November 19, 1869.
21 north	1 east	23,060.84	November 19, 1869	November 19, 1869.
22 north	1 west	22,984.94	November 19, 1869	November 19, 1869.
22 north	2 west	22,984.94	November 19, 1869	November 19, 1869.
22 north	2 east	23,006.63	November 19, 1869	November 19, 1869.
5 south	3 west	23,058.23	November 19, 1869	November 19, 1869.
1 north	5 west	22,980.31	November 19, 1869	November 19, 1869.
22 north	1 east	22,982.76	November 19, 1869	November 19, 1869.
1 south	5 west	22,980.31	November 19, 1869	November 19, 1869.
6 north	9 west	23,048.23	December 3, 1869	December 3, 1869.
10 north	13 west	23,029.42	December 3, 1869	December 3, 1869.
5 south	6 west	22,994.67	December 6, 1869	December 6, 1869.
4 south	6 west	20,242.55	December 3, 1869	December 3, 1869.
1 north	6 east	3,992.28	January 22, 1870	January 22, 1870.
10 north	1 west	22,436.43	January 22, 1870	January 22, 1870.
11 north	2 west	20,406.15	January 22, 1870	January 22, 1870.
3 south	6 west	20,826.53	February 23, 1870	February 23, 1870.
4 south	6 west	23,174.11	February 23, 1870	February 23, 1870.
4 south	5 west	23,031.52	February 23, 1870	February 23, 1870.
5 south	5 west	14,068.93	February 23, 1870	February 23, 1870.
1 south	6 west	17,693.42	June 30, 1870	June 30, 1870.
2 south	6 west	6,244.96	June 30, 1870	June 30, 1870.
6 south	1 west	22,888.62	August 3, 1870	August 3, 1870.
7 south	1 west	23,000.61	August 3, 1870	August 3, 1870.
9 south	1 east	11,819.13	August 3, 1870	August 3, 1870.
8 south	1 east	12,036.06	August 3, 1870	August 3, 1870.
2 north	5 west	16,006.68	June 29, 1870	June 29, 1870.
2 north	4 west	21,001.34	July 1, 1870	July 1, 1870.
		989,036.40		

G.—Statement showing the condition of appropriation for the clerks in the office of the surveyor general of Montana, for the fiscal year ending June 30, 1870.

DR.			CR.		
1869.			1870.		
July 1	To balance.....	\$392 33	April 20	By appropriation	\$3,000 00
Oct. 1	To W. W. DeLacy, draughtsman.	375 00		By deficiency appropriation for fiscal year ending June 30, 1870.	500 00
July 1 to Sept. 14.	To William T. McFarland, clerk.	309 78	June 30	By mineral account (deposits)	768 00
Sept. 15 to Sept. 30.	To T. C. Bailey, chief clerk...	73 36			
1870.					
Jan. 1	To W. W. DeLacy, draughtsman.	375 00			
Jan. 1	To T. C. Bailey, chief clerk ..	450 00			
Oct 30 to Dec. 26.	To G. F. Marsh, clerk.....	232 34			
April 1	To W. W. DeLacy, draughtsman.	375 00			
April 1	To T. C. Bailey, chief clerk ..	450 00			
April 1	To Seymour Nebeker, clerk..	375 00			
June 30	To T. C. Bailey, chief clerk ..	450 00			
June 30	To W. W. DeLacy, draughtsman.	251 37			
June 30	To G. F. Marsh, draughtsman	94 78			
June 30	To balance.....	64 04			
		4,268 00			4,268 00

H.—Statement showing the condition of the appropriation for the salary of surveyor general of Montana for the fiscal year ending June 30, 1870.

DR.			CR.		
1869.					
October 1	To services 1st quarter..	\$750 00	By appropriation	\$3,000 00	\$3,000 00
1870.					
January 1	To services 2d quarter ..	750 00			
April 1	To services 3d quarter ..	750 00			
June 30	To services 4th quarter..	750 00			
		3,000 00		3,000 00	3,000 00

I.—Statement showing the condition of appropriation for incidental expenses of the office of the surveyor general of Montana for the fiscal year ending June 30, 1870.

DR.				CR.	
1869.					
July	1	To balance.....	\$1,211 28	By appropriation.....	\$2,000 00
Sept.	3	To H. D. Washburn, No. 1, voucher 1.	42 00	By deficiency appropriation.	900 00
Oct.	1	To H. D. Washburn, No. 2, vouchers 1, 2, and 3.	28 50		\$2,900 00
Oct.	1	To David A. Bentley, No. 3.	227 41		
Oct.	1	To John H. Ming, No. 4	32 25		
Oct.	1	To Daniel C. Corbin, No. 5.	20 37		
Dec.	4	To H. D. Washburn, No. 6, vouchers 1, 2, 3, and 4.	55 00		
1870.					
Jan.	1	To H. D. Washburn, No. 7.	10 00		
Jan.	1	To Seymour Nebeker, No. 8.	30 98		
Jan.	1	To Daniel C. Corbin, No. 9.	62 50		
Jan.	1	To John H. Ming, No. 10	8 25		
Jan.	2	To H. D. Washburn, No. 11.	6 00		
April	1	To John H. Ming, No. 12.	18 75		
April	1	To Daniel C. Corbin, No. 13.	62 50		
April	1	To H. D. Washburn, No. 14.	12 70		
May	28	To W. W. DeLacy, No. 15	18 62		
June	28	To Geo. Clinton, No. 16 ..	60 00		
June	30	To Benj. D. Stone, No. 17.	100 55		
June	30	To D. C. Corbin, No. 18 ..	62 50		
June	30	To John H. Ming & Co., No. 19.	65 82		
June	30	To H. D. Washburn, No. 20.	29 34	\$2,165 32	
June	30	To balance.....	734 68	734 68	
			2,900 00	2,900 00	
					2 900 00 2,900 00

No. 17 L.—*Report of the surveyor general of Idaho.*

SURVEYOR GENERAL'S OFFICE,
Boisé City, Idaho Territory, August 22, 1870.

SIR: In accordance with your instructions, under date of May 2, 1870, I have the honor to submit the following report, in duplicate, of the field and office work performed in this surveying district for the fiscal year ending June 30, 1870:

A.—Estimate of expenses incidental to the survey of public lands in Idaho for the fiscal year ending June 30, 1872.

B.—Statement of expenditure of appropriation for compensation of surveyor general and clerks in his office for the fiscal year ending June 30, 1870.

C.—Statement of incidental and office expenses for the fiscal year ending June 30, 1870.

D.—Statement of expenditure of the appropriation for the fiscal year ending June 30, 1870.

E.—Statement of original maps and copies transmitted to the General Land Office, and to the district offices, since the date of my last report.

F.—Statement showing the condition of surveying contracts entered into since June 30, 1869.

G.—Statement of descriptive notes sent to local land offices since the date of my last report.

H.—Tabular list of townships surveyed since the date of my last report, showing area of the public lands.

I.—Statement of amount deposited by individuals, &c., for the survey of mineral lands.

K.—Names, nativity, &c., of surveyor general and clerks for the fiscal year ending June 30, 1870.

The surveys of the last year have been the extension of the Boisé meridian to township No. 55 north, the first and second standard parallels south and east, the exterior and subdivision lines of parts of the Weiser and Bruneau Valleys and Camas Prairie north.

In Camas Prairie, the exterior boundaries were run in full, and in consequence of the reduction of the surveyor's contract one-half, but a small portion was subdivided. As this part of the Territory has been settled since its organization, and the settlers are desirous of having the boundaries of their claims defined, it is proposed to have this portion of the country thoroughly subdivided under the forthcoming appropriation.

The Weiser Valley contains the best farming land in the Territory, being a black loam. Many settlers located here the last year, and it will soon be thickly settled. It is covered with superior grass, and is a fine grazing country, but early and late snows require that stock should be sheltered in winter. Wheat, oats, and barley yield heavy crops. The neighboring mountains abound with bear, elk, and deer, and the streams are filled with trout. This valley has been surveyed in part, and will be completed this fall.

The Bruneau Valley is a superior grazing country. Many thousand head of cattle were pastured here last winter without shelter, although an unusual quantity of snow fell in the mountains.

It has been discovered that the white sage, after the maturing of its seeds in the fall, is sought for by cattle in preference to grass. It has much the taste and consistency of barley; and, growing to the height of three feet in parts of the country where snow seldom falls to a great depth, cattle can be kept through the winter without much expense. As more than one-half of the wild sage in the center and southern portions of the Territory is of this species, and the climate in winter generally mild, the prospects are that cattle will be raised here to supply the neighboring country. Sheep have been taken to this valley, and are doing well.

The first standard parallel south was extended east 132 miles, to the "burnt" or lava district, a few miles west of Fort Hall. This line crosses the Bruneau Valley, and passes over a good farming and grazing country, running parallel to, and in the vicinity of, Snake River.

The second standard parallel south was run east from the Boisé meridian, 294 miles. This line crosses Goose Creek, Marsh, and Bear River Valleys, which are thickly settled, principally by Mormons. These farmers, though living in a primitive state, are prosperous, and have good farms, and raise large crops of cereals. They have numerous horses, cattle, and sheep. The town of Franklin, containing a population of 1,500, is supposed to be in this Territory. At least 5,000 people have settled here.

The exterior and subdivision lines of this portion of Idaho should be run, and particularly the boundary line between Idaho and Utah, for reasons heretofore stated. The territorial proportion of revenue received from this county last year was \$1,026 50, showing that none of the Mormon population contributed toward the support of the Territory, they all claiming to be in Utah. With the Territory overburdened with debt and high taxes, these people should be compelled to contribute their share of the expenses, which can only be done by having this boundary surveyed.

The boundary lines of the Shoshone and Bannock Indian reservation should be run, in order to close the lines of the United States surveys upon the reservation lines, and to prevent trespassing upon the reservation, and trouble between the settlers and Indians.

Between the base line and the first standard parallel south and east is a large extent of level country, suitable for farming and grazing, and watered by numerous small streams. Big and Little Camas Prairies, through which the base line passes, contain several townships of the best farming and grazing lands.

Many persons, the last year, have immigrated from Montana and the Eastern States, and have taken up claims, and the population is gradually increasing. The fine, healthy climate and fertility of soil, and profitable returns made to farmers for their labor, will, in time, insure that the valleys and level portions of the country will be well settled.

The silver mines of Owyhee district are being worked with good machinery, and the yield averages with that of the last year.

The silver mines of Rocky Bar, and the Yuba district, in Alturas County, have not been worked to any extent during the past year, owing to the want of capital to open them, although the richness of many of the mines is beyond a doubt.

In Idaho County numerous quartz leads have been discovered, and are partially developed by sinking shafts and running tunnels. These mines are worked for free gold; in all of them is more or less silver. The yield of gold for the last year is about \$500,000. This county is mountainous, and has but a small quantity of land fit for cultivation.

Lemhi County, which was divided from Idaho County by act of the last legislature, has a small valley suitable for farming, in which are several settlers. The yield of gold for the last year was \$500,000.

Shoshone County has about 50 miles square of rich farming land, through which the Northern Pacific Railroad will pass. There are but few settlers in this part of Idaho at present, but it will eventually be thickly settled. The mountains abound with the best quality of timber, particularly cedar, which will be available for railroad purposes. The yield of gold for the past year was \$500,000. Many Chinese are working the placer mines, some of whom pay considerable internal revenue to the Government.

Nez Percé County, the oldest settled part of Idaho, contains several townships of superior farming land. The farmers nearly all own reaping and thrashing machines, and sell their produce to the miners at remunerative prices. The climate is sufficiently mild in winter to permit the cattle and sheep to graze without shelter.

The town of Lewiston, at the junction of Snake and Clearwater River, is the head of navigation, to which the Columbia River steamboats run, giving this portion of the Territory the advantage in transportation.

About 250 placer mines are being worked in this county, yielding yearly from \$500,000 to \$600,000.

Placer mines have been discovered on the bars of Snake River, from Fort Hall to the Bruneau.

In Ada County, the settlers are mostly engaged in farming. They possess the most improved agricultural machinery, and all the facilities for expeditious work. The land on the Boise and Payette Rivers is nearly all claimed.

Some placer mines have been worked in this county, on the bars of the rivers, paying good wages.

The placer mines of Boise County are being profitably worked this year; \$100,000 per month, since the opening of the mining season, having been taken from the mines. The yield will probably average this amount until the supply of water fails. There is but little farming land in this county, it being generally mountainous.

The survey of the Nez Percé Indian reservation is about completed, and the field-notes of the same are expected to be received in a few days.

I am, very respectfully, your obedient servant,

LA FAYETTE CARTEE,
Surveyor General of Idaho.

Hon. JOSEPH S. WILSON,
Commissioner General Land Office.

A.—Estimate of expenses incidental to the survey of public lands in Idaho for the fiscal year ending June 30, 1870.

Office expenses:	
For salary of surveyor general.....	\$3,000 00
For salary of clerks.....	4,000 00
For rent of office, fuel, books, and other expenses.....	3,000 00
	<hr/>
	10,000 00

Surveying service:

For surveying 150 miles standard lines, at \$15 per mile.....	\$2,250 00	
For surveying 150 miles guide meridian, at \$15 per mile,	2,250 00	
For surveying 480 miles exterior township boundaries, at \$12 per mile.....	5,760 00	
For surveying 2,400 miles subdivisions, at \$10 per mile.....	24,000 00	
		\$34,260 00
		<u>44,260 00</u>

B.—Statement of expenditure of appropriation for compensation of surveyor general and clerks
in his office, for the fiscal year ending June 30, 1870.

Dr.			Cr.		
1869.	To amount paid surveyor general and clerks, 3d quarter 1869.	\$1,575 00	1869.	By balance.....	\$2,699 73
	To amount paid surveyor general and clerks, 4th quarter 1869.	1,575 00	July 1	By appropriation approved March 3, 1869, as advised by letter from the Department, of May 8, 1869.	7,000 00
1870.	To amount paid surveyor general and clerks, 1st quarter 1870.	1,575 00			
	To amount paid surveyor general and clerks, 2d quarter 1870.	1,575 00			
	To balance.....	3,399 73			
		<u>9,699 73</u>			<u>9,699 73</u>
				By balance.....	<u>3,399 73</u>

C.—Statement of incidental and office expenses for the fiscal year ending June 30, 1870.

1869.	To amount expended 3d quarter 1869.	\$279 55	1869.	By balance.....	\$1,022 68
	To amount expended 4th quarter 1869.	538 43	July 1	By appropriation approved March 3, 1869, as advised by letter from the Department, of May 8, 1869.	2,500 00
1870.	To amount expended 1st quarter 1870.	247 00			
	To amount expended 2d quarter 1870.	245 75			
	To balance.....	2,211 95			
		<u>3,522 68</u>			<u>3,522 68</u>
				By balance.....	<u>2,211 95</u>

D.—Statement of expenditure of the appropriation for the fiscal year ending June 30, 1870.

Dr.			Cr.		
1869	To amount reported for payment on contract No. 11 to Allen M. Thompson.	\$1,405 00	1869.	By balance.....	\$1,343 63
	To amount reported for payment on contract No. 12 to Peter W. Bell.	1,980 00	June 30	By appropriation approved March 3, 1869, as advised by letter from the Department of May 8, 1869.	25,000 00
	To amount reported for payment on contract No. 11 to Allen M. Thompson.	1,727 53			
	To amount reported for payment on contract No. 11 to Allen M. Thompson.	1,891 05			
	To amount reported for payment on contract No. 13 to Peter W. Bell.	4,410 00			
	To amount reported for payment on contract No. 14 to Allen M. Thompson.	2,153 50			
1870	To amount reported for payment on contract No. 15 to Peter W. Bell.	378 58			
	To amount reported for payment on contract No. 15 to Peter W. Bell.	2,653 07			
	To amount reported for payment on contract No. 16 to Allen M. Thompson.	1,803 93			
	To amount reported for payment on contract No. 16 to Allen M. Thompson.	3,143 27			
	To balance	4,797 70			
		<u>26,343 63</u>			<u>26,343 63</u>
				By balance.....	<u>4,797 70</u>

E.—Statement of original maps and copies transmitted to the General Land Office and to the district offices since the date of my last report.

Descriptive plats.	Original.	General Land Office.	District office.	Total.	When transmitted to the General Land Office.	When transmitted to the district office.
Boisé meridian, north from township 36 north...	1	1	.....	2	July 19, 1869	
First standard parallel south and east through ranges 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, and 27 east.	1	1	.....	2	Aug. 20, 1869	
Exterior lines of township 31 north, ranges 1, 2, and 3 east, and of township 32 north, ranges 1 and 2 east and 1 west, and of townships 33, 34, and 35 north, ranges 1 east and 1 west.	1	1	.....	2	Oct. 20, 1869	
Second standard parallel south and east, through ranges 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, and 49 east.	1	1	.....	2	Nov. 19, 1869	
Third standard parallel north, through ranges 1, 2, and 3 west.	1	1	.....	2	Jan. 7, 1870	
Exterior lines of townships 6, 7, and 8 north, range 1 east, and of townships 10, 11, 12, and 13 north, range 1 west.	1	1	.....	2	Jan. 7, 1870	
Exterior lines of township 6 south, ranges 4, 5, and 6 west.	1	1	.....	2	Feb. 11, 1870	
Exterior lines of townships 10, 11, and 12 north, range 2 west, and of townships 10, 11, and 12 north, range 3 west, and of township 10 north, ranges 4 and 5 west.	1	1	.....	2	April 26, 1870	
Third standard parallel north, through ranges 4, 5, 6, and 7 west.	1	1	.....	2	June 14, 1870	
Exterior lines of township 10 north, range 6 west, and of township 11 north, ranges 4, 5, 6, and 7 west, and of township 12 north, ranges 4, 5, 6, and 7 west, and of township 13 north, ranges 2, 3, 4, 5, and 6 west.	1	1	.....	2	June 14, 1870	
Township 30 north, range 2 east	1	1	1	3	Oct. 23, 1869	Oct. 23, 1869
Township 30 north, range 3 east	1	1	1	3	Oct. 23, 1869	Oct. 23, 1869
Township 31 north, range 1 east	1	1	1	3	Oct. 23, 1869	Oct. 23, 1869
Township 31 north, range 2 east	1	1	1	3	Oct. 23, 1869	Oct. 23, 1869
Township 7 north, range 1 east	1	1	1	3	Jan. 7, 1870	Jan. 7, 1870
Township 8 north, range 1 east	1	1	1	3	Jan. 7, 1870	Jan. 7, 1870
Township 1 south, range 2 west	1	1	1	3	Mar. 7, 1870	Mar. 7, 1870
Township 5 south, range 1 east	1	1	1	3	Mar. 7, 1870	Mar. 7, 1870
Township 6 south, range 5 east	1	1	1	3	Mar. 7, 1870	Mar. 7, 1870
Township 6 south, range 6 east	1	1	1	3	Mar. 7, 1870	Mar. 7, 1870
Township 10 north, range 4 west	1	1	1	3	April 26, 1870	April 26, 1870
Township 10 north, range 5 west	1	1	1	3	April 26, 1870	April 26, 1870
Township 11 north, range 4 west	1	1	1	3	June 14, 1870	June 14, 1870
Township 11 north, range 5 west	1	1	1	3	June 14, 1870	June 14, 1870
Township 10 north, range 6 west	1	1	1	3	June 14, 1870	June 14, 1870
Township 11 north, range 6 west	1	1	1	3	June 14, 1870	June 14, 1870

F.—Statement showing the condition of surveying contracts entered into since June 30, 1869.

Number of contract.	Name of deputy.	Date of contract.	Character, amount, and locality of work.	Remarks.
11	Allen M. Thompson.....	1869. May 29	Boisé meridian north from township 36 north to township 51 north; exterior lines of township 30 north, ranges 1, 2, and 3 east; township 31 north, ranges 1 and 2 east and 1 west; townships 32, 33, 34, and 35 north, ranges 1 east and 1 west; and township 35 north, range 1 west; and subdivision lines of township 30 north, ranges 2 and 3 east; and of township 31 north, ranges 1 and 2 east.	Surveys completed and notes returned and approved, and plats and transcripts transmitted.
12	Peter W. Bell.....	July 6	First standard parallel south and east, through ranges 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, and 27 east.	Surveys completed and notes returned and approved, and plats and transcripts transmitted.
13	Peter W. Bell.....	August 20	Second standard parallel south and east through ranges 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, and 49 east.	Surveys completed and notes returned and approved, and plats and transcripts transmitted.
14	Allen M. Thompson.....	November 4	Third standard parallel north, through ranges 1, 2, and 3 west; exterior lines of townships 6, 7, and 8 north, range 1 east; and of townships 10, 11, 12, and 13 north, range 1 west; and the subdivision lines of townships 7 and 8 north, range 1 east.	Surveys completed and notes returned and approved, and plats and transcripts transmitted.
15	Peter W. Bell.....	November 25	Exterior lines of township 6 south, ranges 4, 5, and 6 west, and the subdivision lines of township 1 south, range 2 west; township 5 south, range 1 east, and township 6 south, ranges 5 and 6 east.	Surveys completed and notes returned and approved, and plats and transcripts transmitted.
16	Allen M. Thompson.....	1870. February 23	Third standard parallel north through ranges 4, 5, 6, and 7 west; exterior lines of townships 10 and 13 north, ranges 2, 3, 4, 5, and 6 west; and of townships 11 and 12 north, ranges 2, 3, 4, 5, 6, and 7 west; and the subdivision lines of townships 10 and 11 north, ranges 4, 5, and 6 west.	Surveys completed and notes returned and approved, and plats and transcripts transmitted.
18	Darius F. Baker.....	February 26	Exterior lines of townships 14 and 15 north, ranges 1, 2, and 3 west; and the subdivision lines of townships 14 and 15 north, ranges 1, 2, and 3 west, and of township 13 north, range 3 west.	Deputy now in the field.
17	David P. Thompson.....	1869. December 23	Exterior boundaries of the Nez Percé Indian reservation, and the subdivision lines of the same; the whole extent of surveys not to exceed \$12,862 41.	Deputy now in the field.

G.—Statement of descriptive notes sent to local land offices since the date of my last report.

Township.	Range.	Date when transmitted.
30 north.....	2 east.....	June 24, 1870.
30 north.....	3 east.....	June 24, 1870.
31 north.....	1 east.....	June 24, 1870.
31 north.....	2 east.....	June 24, 1870.
7 north.....	1 east.....	June 24, 1870.
8 north.....	1 east.....	June 24, 1870.
1 south.....	2 west.....	June 24, 1870.
5 south.....	1 east.....	June 24, 1870.
6 south.....	5 east.....	June 24, 1870.
6 south.....	6 east.....	June 24, 1870.
10 north.....	4 west.....	June 24, 1870.
10 north.....	5 west.....	June 24, 1870.
10 north.....	6 west.....	June 24, 1870.
11 north.....	4 west.....	June 24, 1870.
11 north.....	5 west.....	June 24, 1870.
11 north.....	6 west.....	June 24, 1870.

H.—Tabular list of townships surveyed since the date of my last report, showing areas of the public lands.

No. of townships surveyed.	Designation of townships.	Areas of public lands.
1	Township 30 north, range 2 east.....	23,077.05
2	Township 30 north, range 3 east.....	14,695.87
3	Township 31 north, range 1 east.....	19,221.53
4	Township 31 north, range 2 east.....	11,556.74
5	Township 7 north, range 1 east.....	22,195.22
6	Township 8 north, range 1 east.....	5,120.00
7	Township 1 south, range 2 west.....	21,698.71
8	Township 5 south, range 1 east.....	23,179.34
9	Township 6 south, range 5 east.....	23,091.04
10	Township 6 south, range 6 east.....	22,689.15
11	Township 10 north, range 4 west.....	11,516.60
12	Township 10 north, range 5 west.....	12,213.52
13	Township 10 north, range 6 west.....	79.06
14	Township 11 north, range 4 west.....	10,245.81
15	Township 11 north, range 5 west.....	22,637.25
16	Township 11 north, range 6 west.....	18,901.14
35	previously reported.....	262,118.03 520,912.10
	Total acres surveyed.....	783,030.13

I.—Statement of amount deposited by individuals, &c., for the survey of mineral lands.

Name.	Locality.	Field-work.	Office-work.	Advertising.	Total.
Monarch Gold and Silver Mining Company....	Alturas County.	\$110 00	\$27 50	\$102 00	\$239 50

K.—Names, nativity, &c., of surveyor general and clerks for the fiscal year ending June 30, 1870, and to date.

Names.	Occupation.	Nativity.	Whence appointed.	Salary.
La Fayette Cartée.....	Surveyor general.	New York.....	Idaho Territory...	\$3,000 00
William P. Thompson.....	Chief clerk.....	New York.....	Idaho Territory...	1,800 00
Daniel Cram.....	Draughtsman.....	New Hampshire..	Idaho Territory...	1,500 00

No. 17 M.—*Report of the surveyor general of Utah.*

SURVEYOR GENERAL'S OFFICE,
Salt Lake City, Utah, August 20, 1870.

SIR: In accordance with your instructions, I have the honor to submit the following report, in duplicate, of the progress of the surveys in this district for the fiscal year ending June 30, 1870:

The work contracted for by my predecessor, with Deputies Julien Bausman and Joseph Grolinski, (and to which reference was made in my last report,) for the extension of the standard lines both north and south of the Salt Lake base line and east of the principal meridian, and the subdividing of certain fractional townships in the vicinity of Bear Lake, along the line of the Union Pacific Railroad, and in Parley's Park, was completed within the time to which they were limited in their respective contracts, and transcripts of the field-notes, with plats of survey, were transmitted to the Department.

My plan of operations for the extension of the principal lines of survey over the southwestern section of the Territory was communicated to you under date of August 12, 1869, and I deemed it advisable, in order to avoid carrying the standard lines over the high mountain range which traverse that section in a northeasterly and southwesterly direction, to adopt a new line as a guide meridian whenever the nature of the country required it to make the line available.

A contract was made with Julien Bausman, esq., on the 28th day of October, 1869, for the execution of this work by surveying and establishing a guide meridian from the corner to townships 6 and 7 south, between ranges 4 and 5 west, through townships 7 to 42 south, inclusive, and the necessary correction lines.

On the 25th day of the same month I contracted with Ferdinand Dickert, esq., for the survey of the settlements and arable lands in the vicinity of the town of Fillmore, and under special instructions he connected the lines of survey with the Corn Creek Indian reserve.

The work assigned to Joseph Grolinski, esq., under contract dated November 20, 1869, and after the completion of the surveys under his contract heretofore referred to, for subdividing the arable lands between the towns of Summit and St. George, is completed, and the necessary transcripts and plats thereof are now being prepared.

By reason of the importance attaching to the mining interest here, a contract was made with Charles L. Stevenson, esq., on the 6th day of April last, for the extension of the surveys in the valleys to the base of the mountains in the vicinity of the cañons of Bingham, Big Cottonwood, Little Cottonwood, and the cañons leading to the Rush Valley mines. The amount of compensation to which the deputy was limited, however, precluded the possibility of extending the surveys in Rush Valley under his contract and bond, after completing the work at the other points mentioned. I deemed this work highly important, as it serves to connect the mines with the public surveys in the valleys, and also places numerous settlers in a position to acquire title to their lands.

The surveys that are now being made along the Beaver River in Southern Utah will include all of an urgent nature at this time in that section of the Territory.

The last contract made by this office was entered into with Ferdinand Dickert, esq., on the 18th day of June last, for the survey of the settlements and arable lands along the Bear and Weber Rivers.

No deposits have been made by individuals for the survey of mineral lands, but several applications for surveys of this nature will probably be made during the coming fall.

The statements accompanying this report are as follows:

A.—Statement of surveys completed during the fiscal year ending June 30, 1870.

B.—Statement of surveys in progress, to be executed during the fiscal year ending June 30, 1871.

C.—Statement of amount of salaries paid surveyor general and clerks during the fiscal year ending June 30, 1870, and incidental expenses for the same period.

The estimate of appropriations required for the surveying service in this district for the fiscal year ending June 30, 1872, amounting to \$24,500, was transmitted to you on the 23d day of July, 1870.

All of which is respectfully submitted.

C. C. CLEMENTS,
Surveyor General of Utah.

Hon. JOSEPH S. WILSON,
Commissioner of the General Land Office.

SURVEYOR GENERAL'S OFFICE,

Salt Lake City, Utah, August 20, 1870.

SIR: In compliance with your letter of instructions of March 30, 1870, I have the honor to submit the following information touching the agricultural, manufacturing, mineral, and commercial capacities of Utah:

AGRICULTURE.

The valleys of Utah, to which the agricultural interest is confined, have an altitude of from 4,000 to 5,000 feet above the level of the sea, and possess a soil well adapted to the growth of all the ordinary cereals, vegetables, and fruits.

For several years the farmer has labored under one serious disadvantage in the growth of his crops, from the frequent ravages of the grasshopper. During the past and the present years, thousands of acres of promising fields of grain have been swept away by these insects, and every effort to preserve the crops has been unavailing. In the face of this difficulty, however, enough has been produced to supply the wants of the people at home at reasonable prices. Wheat is now worth \$1 25; corn, \$1; oats, \$1 15; and barley, \$1 25 per bushel, and flour from \$3 50 to \$3 75 per cwt.; and while the limited amount of tillable land and the expense of irrigation preclude the possibility of Utah becoming a grain-exporting Territory, yet a sufficiency may be depended on for home consumption.

The ninth agricultural fair held at Salt Lake City, on the 4th and 5th days of October last, awarded a special premium to Mr. Sudberry on the African bearded wheat, grown in Kaysville, Davis County, on bench land, without irrigation. The yield was stated to be 36 bushels to the acre, and the wheat produced $47\frac{1}{2}$ pounds of superfine flour to the bushel. Among the fruits on exhibition were figs, pomegranates, and other tropical productions from Southern Utah, and apples, pears, peaches, plums, grapes, &c., of an excellent quality, from other sections of the Territory, together with vegetables of every description.

The estimated area under cultivation is 140,000 acres, of which 100,000 acres are planted in cereals and root crops, averaging as follows to the acre: Wheat, 23 bushels; barley, 30 bushels; oats, 31 bushels; corn, 20 bushels; potatoes, 135 bushels; beets, 265 bushels; carrots, 344 bushels.

Meadow produces $1\frac{1}{2}$ tons; sorghum, 79 gallons; and cotton, 150 pounds per acre.

There are about 1,000 acres in apple orchards, 1,200 acres in peach orchards, and 30,000 acres in meadow.

Many thousands of acres of land, remote from streams of sufficient size to afford water for irrigation, may in time be reclaimed and made to yield bountifully by means of artesian wells and other agencies. The rapid increase in population will soon render it necessary to resort to means of this nature, that homes may be provided for the emigrant and the rising generation, without encroaching upon the rights of others. It is estimated that the expense already incurred in the construction of canals and ditches for irrigation amounts to \$1,250,000, and the work in progress will swell this sum to \$1,500,000.

The Mormon authorities are introducing a coöperative system of farming, and design making it general throughout their organization. Coöperation in mercantile pursuits was introduced in the fall of 1869; but the results, save to the larger stockholders, are reported as unsatisfactory. The points advanced in favor of coöperative farming are: First. That by consolidating their capital, many will be enabled to supply themselves with the necessary implements, which a want of means renders it impossible otherwise to do. Second. That although it may not entirely destroy the relations between employer and employé, it will so adjust those relations that labor will escape the advancement and encroachment of capital, and capital will be compelled to recognize and concede the rights of labor.

MANUFACTURES.

The capital employed in manufactures is estimated at \$1,250,000, mainly invested in flouring, woolen, cotton, saw, and paper mills, and iron furnaces. There are also establishments for the manufacture of leather, boots and shoes, pottery, furniture, jewelry, brushes, straw goods, and salt. The woolen goods manufactured, embracing cassimeres, doeskins, tweeds, linseys, flannels, and blankets, are equal in quality to those imported, and, at a slight reduction in the cost of labor, the manufacturers inform me that they will be able to compete successfully with manufactures, both east and west, in prices. Two additional woolen mills will be completed and in running order the present year. One of them is located at the town of Beaver, and will cost \$20,000. The dimensions are 35 by 95 feet, and the walls are constructed of rock. The other is near E. T. city, size 49 by 89 feet, one story high, with walls of blue limestone. The spinning capacity of these mills is 360 spindles each.

The manufacture of cotton fabrics will be insignificant for all time to come. The

lands adapted to the culture of cotton are mainly limited to narrow patches along the Rio Virgen, and, unfortunately, last season a part of this land was washed away.

The mountain streams afford ample water-power for manufacturing purposes, while the deposits of coal in the valleys and the timber on the mountains leave no scarcity of fuel. The price of wood in Salt Lake City is \$8 per cord, and coal \$11 per ton.

IRON AND COAL.

Among the numerous deposits of iron ore in Utah the deposit on Bear River, near the Union Pacific Railroad, and northwesterly from the town of Evanston, has, perhaps, the advantage in point of location at this time. The ore is a red oxide, assaying from 20 to 60 per cent. of iron; and, although somewhat refractory on the surface, it is believed that at a small depth beneath a superior quality of ore will be found. The coal fields in the vicinity of Rawling Springs, Wyoming, afford coal free from sulphur, admirably adapted to the smelting of iron ores, and it can be delivered by rail within a short distance of these mines of iron.

In Iron County the manufacture of iron is receiving some attention, and it is now demonstrated to a certainty that a good article of gray cast iron can be produced. The ore is remarkably rich, assaying 72 per cent., and is reduced with charcoal. Machinery has been ordered from the East, and during the fall it is calculated that the works will produce from three to five tons daily of a superior quality of gray cast iron. The parties in interest claim the ability to compete successfully with other markets, and agree to obligate themselves to furnish a good article of iron, delivered at their works, for the price charged for freight from Chicago to Salt Lake City for a like quantity, with the addition of one cent per pound. The location of these works is 45 miles north of St. George.

On the seventh standard parallel south, in range 12 west, the deputy reports the existence of a ridge of magnetic iron, nearly pure.

The coal beds in San Pete County are situated 21 miles southeast of the town of Nephi. A specimen of the coal was sent to the Department in May last. The coal has been used for several years in the blacksmith's forge, and is pronounced equal in quality to the celebrated Evanston coal of Wyoming. Coal has also been discovered in Coal Creek, about 10 miles east of Cedar City, in Iron County, but the extent of the deposit is not ascertained.

MINING.

As mining districts, Little Cottonwood Cañon, Bingham Cañon, Tintie Valley, Rush Valley, Minersville, and Sevier are the most developed, although it cannot be questioned that vast deposits of the precious metals exist throughout the entire southern section of the Territory, and that Utah is especially rich in argentiferous ores.

In Little Cottonwood Cañon several good silver mines are being worked profitably. The ores are mainly argentiferous galena, with carbonate and sulphate of copper and antimony entering into their composition. The mine most developed in this cañon is known as the Woodman, or Emma lode, distant 11 miles from the valley, and has an altitude of 6,000 feet above the sea level. During the year ending on the 30th of June last 600 tons of ore were shipped from this cañon to San Francisco for reduction, and sold at an average of \$150 per ton, netting to the Territory \$50,000. To show the rapid increase of these mines, I will state that last month the yield was \$60,000. Seven thousand tons of ore will be shipped during the present season for reduction.

The rates of transportation are as follows:

From the mines to Salt Lake City, (25 miles,) \$10.

From Salt Lake City to Newark, New Jersey, (currency,) \$26 50.

From Salt Lake City to San Francisco, (coin,) \$18 50.

In the Sevier mines, Pi Ute County, several well-defined lodes have been found, assaying, per ton, as follows: Curry, \$880; Miners' Relief, \$160; Bully Boy, \$132; Yankee Blade, \$110.

The locality is well supplied with wood, water, and a good quality of fire-clay for furnaces.

The Tintie Valley mines are a recent discovery, located west of Utah Lake and 60 miles from Salt Lake City. The surface ore yields from \$40 to \$100 per ton in silver.

In Bingham Cañon placer diggings exist, from which a considerable amount of gold has been and is now being taken, but I have been unable to get any figures. The ledges of silver-bearing rock are numerous and extensive.

New discoveries of argentiferous galena are of almost daily occurrence in the Rush Valley mines of Tooele County. The width of the veins averages 3 feet, and the deepest shaft is 160 feet.

One small furnace for the reduction of ores is completed near this city. A recent run of 36 hours was made and yielded 5,000 pounds of bullion, valued at \$300 per ton. This furnace is capable of producing from 10 to 15 tons of bullion a week. Other furnaces are being erected in different sections of the Territory.

MISCELLANEOUS.

The Utah Central Railroad, connecting Salt Lake City with the Pacific Railroad at Ogden, is completed and in running order. The length of the road is 37 miles. Ground was first broken on the 17th of May, 1869, track-laying was begun on the 22d day of September, and the last rail laid on the 10th day of January, 1870. The cost of the road and rolling-stock is estimated at \$1,500,000.

The total value of real estate and personal property, as reported by the territorial auditor for the year 1869, was \$11,390,606.

Attention is being directed to wool-growing, and some excellent stock has been imported. The demand for wool is continually increasing.

The culture of tea has not been attempted.

Numerous experiments are being made in the culture of silk, and the country and climate are believed to be well adapted to its production. In the absence of the mulberry, in one instance, the worms were fed for two successive years on Osage orange leaves, and the cocoons reeled an excellent quality of silk. The silk department at the fair heretofore referred to exhibited three sacks of cocoons, twenty skeins of reeled silk, and large quantities of eggs.

No profits have been made during the past year on capital employed in merchandising. This is attributed to the decline in the prices East and consequent decline here, and to the great competition in trade. I have already alluded to a coöperative system of merchandising, introduced one year ago by the Mormon leaders. The object was to confine the trade of the people to their own church organization, they being interdicted from trading, save with the brethren, and by a policy of non-intercourse, promulgated at the same time, to compel the Gentile element to leave the Territory. The tendency of this policy has been to create dissension in their own ranks, without attaining the object for which it was intended.

The course pursued to retard the development of the mines is no less reprehensible. But time will revolutionize matters here, and the day is not far distant when the people will think and act for themselves, regardless of the fulminations of a bigoted priesthood.

Very respectfully,

C. C. CLEMENTS,
Surveyor General of Utah.

Hon. JOS. S. WILSON,
Commissioner General Land Office.

A.—Statement of surveys of public lands completed during the fiscal year ending June 30, 1870, under acts of Congress approved July 27, 1868, and March 3, 1869.

Deputy.	Contract.		Surveys.	Extent.	Cost.
	No.	Date.			
Joseph Gorlinski...	2	May 29, '69	First guide meridian east	<i>Miles. chs. lks.</i> 27 00 00	\$405 00
			First standard parallel south.....	4 00 00	60 00
			Exterior boundaries of township 2 south, range 3 east; townships 1 and 3 south, range 4 east; townships 1, 2, and 3 south, range 5 east; townships 1, 2, and 3 south, range 6 east.	61 40 24	738 04
			Subdivision of township 1 south, range 3 east; townships 1, 2, 3, 4, and 5 south, range 4 east; townships 1, 2, 3, 4, and 5 south, range 5 east; townships 1, 2, and 3 south, range 6 east; township 3 south, range 7 east.	417 48 56	4,176 07
Julien Bausman ...	3	May 31, '69	Salt Lake base line.....	23 00 00	345 00
			First guide meridian east.....	72 00 00	1,080 00
			First standard parallel north.....	22 40 00	337 50
			Second standard parallel north.....	9 00 00	135 00
			Third standard parallel north.....	18 40 00	277 50
			Exterior boundaries of townships 12 and 13 north, range 5 east; townships 5 and 6 north, range 7 east; and township 5 north, range 8 east.	21 78 36	263 75
			Subdivision of townships 12 and 13 north, range 5 east; township 13 north, range 6 east; townships 5 and 6 north, range 7 east; and township 5 north, range 8 east.	152 07 52	1,520 94
Ferdinand Dickert.	4	Oct. 25, '69	Exterior boundaries of townships 16 17, 18, 19, and 20 south, range 4 west; townships 16, 17, 18, 19, 20, and 21 south, range 5 west.	77 68 40	934 26
			Subdivisions of township 19 south, range 3 west; townships 15, 16, 17, 18, 19, 20, and 21 south, range 4 west; townships 16, 17, 18, 19, 20, and 21 south, range 5 west; townships 21 and 26 south, range 6 west; township 26 south, range 7 west.	505 56 65	5,057 08
Julien Bausman ...	5	Oct. 28, '69	First guide meridian west.....	210 40 00	3,092 50
			Fourth standard parallel south.....	23 00 00	345 00
			Fifth standard parallel south.....	6 00 00	90 00
			Sixth standard parallel south.....	14 40 00	217 50
			Seventh standard parallel south.....	11 00 00	165 00
			Eighth standard parallel south.....	4 40 00	67 50
			Exterior boundaries of township 25 south, range 6 west; townships 26 and 29 south, range 7 west; township 29 south, range 8 west; township 29 south, range 9 west; townships 29 and 30 south, range 10 west; township 42 south, ranges 14, 15, and 16 west.	64 00 00	768 00
			Subdivisions of township 25 south, range 6 west; townships 25, 26, and 29 south, range 7 west; township 29 south, range 8 west; townships 29 and 30 south, range 9 west; townships 29 and 30 south, range 10 west.	179 76 30	1,799 54
				1,926 16 03	21,875 18

B.—Statement of surveys in progress, to be executed during the fiscal year ending June 30, 1871.

Deputy.	Contract.		Surveys.	Remarks.
	No.	Date.		
Joseph Gorlinski .	6	Nov. 20, 1869	Exterior and subdivision lines of townships between the towns of Summit and St. George.	Surveys completed and work returned.
C. L. Stevenson...	7	April 6, 1870	Exterior and subdivision lines of fractional townships 2 and 3 south, ranges 1 and 2 east; township 3 south, ranges 2 and 3 west; townships 3 and 4 south, range 4 west.	
Julien Bausman ..	8	May 7, 1870	Sixth standard parallel south, and the exterior and subdivision lines of townships between the fourth and sixth standard parallels south.	Surveys in progress.
Ferdinand Dickert	9	June 18, 1870	First guide meridian east, continued north 12 miles. Exterior and subdivision lines of townships between the second standard parallel north and the north boundary of township 14 north, and along the Weber River.	Surveys in progress.

C.—Statement of amount of salaries paid surveyor general and clerks for the fiscal year ending June 30, 1870; also incidental expenses for the same period.

Name.	Occupation.	TIME OF SERVICE.		Rate of salary.	Amount.
		From—	To—		
John A. Clark	Surveyor general	July 1	Aug. 2	\$3,000	\$269 02
Courtland C. Clements	Surveyor general	Aug. 3	June 30	3,000	2,730 93
William Hempstead	Chief clerk	July 1	Aug. 2	1,800	161 41
John M. Moore	Chief clerk	Aug. 3	Dec. 31	1,800	738 59
Milton F. Clements	Chief clerk	Jan. 10	June 30	1,800	856 00
Joseph Gorlinski	Draughtsman	July 1	Aug. 2	1,500	134 51
Bernard A. M. Froiseth	Draughtsman	Aug. 16	June 30	1,500	1,312 50
Ferdinand Dickert	Clerk	July 1	Oct. 7	1,400	376 63
Charles L. Stevenson	Clerk	Dec. 13	Dec. 31	1,400	72 28
					6,650 92

Incidental expenses.

Expended during first fiscal quarter	\$213 47
Expended during second fiscal quarter	205 30
Expended during third fiscal quarter	210 15
Expended during fourth fiscal quarter	231 89
Total	860 81

No. 17 N.—Report of the surveyor general of Washington.

UNITED STATES SURVEYOR GENERAL'S OFFICE,
Olympia, Washington Territory, August 10, 1870.

SIR: I have the honor to submit the following report of the progress of public land surveys in this district during the year ending June 30, 1870, together with the usual tabular statements relating thereto.

There have been surveyed during the year 304,483.67 acres of land. Sixty-six miles of standard parallels and 72 miles of meridian lines have been run. The total number of acres surveyed at the close of the year in the Territory is 5,563,177.77.

In order to prosecute surveys in Colville Valley, where settlers have resided nearly 30 years, and where no surveys have heretofore been made, the sixth standard parallel was run east through ranges 31 to 39, inclusive, and a new guide meridian line established between ranges 39 and 40 east of Willamette meridian, which has been designated the "Colville guide meridian." This meridian was run north through town-

ships 25 to 33, inclusive. The eighth and ninth standard parallels were run west from the Colville meridian, through range 39 east of Willamette meridian. The survey of the exterior and subdivisinal lines of four townships in Colville Valley, eight townships in the valley of the Columbia, three townships in the Willopah Valley, and one township in the Yakama Valley, have been completed. The surveys in the Colville, Willopah, and Yakama Valleys cover actual settlements. The exteriors of one township in the Kittitas Valley, and one in the Willopah Valley, have also been run. Plats of these surveys have been duly transmitted to the General Land Office and to the district land offices. All contracts entered into with deputy surveyors during the year have been faithfully and satisfactorily fulfilled. It will be perceived that only four of the sixteen townships surveyed during the year are situated west of the Cascade Mountains; three of these being in the Willopah Valley, although four-fifths of the population of the Territory are west of the mountains.

The western portion of the Territory, and particularly that lying contiguous to the waters of Puget Sound, is covered with dense forests of immense fir, cedar, and other trees, and with a thick undergrowth. There is not an entire township unsurveyed, west of the Cascade Mountains, that is not to a greater or less extent heavily timbered.

It has been impossible to contract for the survey of these lands at the maximum rates now allowed by law. In many instances settlers have been compelled to pay deputy surveyors compensation, in addition to the amount allowed by the United States, to procure a survey of their lands. In my last annual report, I requested that the rates for surveys of lands of this description should be increased as follows: \$18 per mile for standard parallels, \$16 for township, and \$14 for section lines. I am not advised whether Congress has authorized the augmented rates in this Territory. If this has been done, I will contract for the survey of as large a number of townships west of the Cascade Mountains during the present year as the amount of the appropriation will permit.

The clerical force in this office has been engaged during the year in the usual routine of office business.

I desire particularly to call your attention to my estimate of the appropriation required for surveys in this district for the year ending June 30, 1872. The fixed belief now existing in the public mind, of the speedy construction of the Northern Pacific Railroad to Puget Sound, has already turned an increased tide of emigration hitherward. Where formerly emigrants came single, now they are coming in companies of 200 and 300. Within the present week a steamer has landed 118 German emigrants at Steilacoom, who will be followed by another company of 300 before the end of the month. This is only the first installment of an immigration that will be numbered in a few years by tens of thousands. A very large proportion of these emigrants, it is believed, will settle on public lands and engage in agricultural pursuits. This will necessitate the survey of large areas of territory, to meet the expenses of which increased appropriations will be required.

The segregation of immense tracts of valuable agricultural and grazing lands from the public domain for Indian reservations, in my opinion, is no longer necessary in this Territory. The policy of establishing a separate reservation for each tribe might have been right and proper in 1855, when tribal feuds prevailed and quarrels were frequent, and where the safety of the few white settlers in the Territory required that every means should be adopted to placate the hostility of the Indians; but such necessity no longer exists, and I apprehend that little or no difficulty would now arise if all the Indians in the Territory were confined to two or three reservations of reasonable size, in localities affording facilities for hunting and fishing. The aggregate quantity of land embraced in fourteen reservations in this Territory is 1,065,445 acres. One million acres of this land can be opened to settlement without injury to any material interests of the Indians. But a very small portion of this land is either cultivated or actually occupied as reservations. The third and seventh sections of the Point Elliott Treaty (12 U. S. Stat., pp. 928, 929) provide especially for the removal of all the Indians west of the Cascade Mountains to a single reservation, designated and described in said treaty.

I have the honor to transmit herewith statements and estimates as follows:

A.—Showing the amount, character, and condition of public surveys contracted for since the date of last annual report.

B.—Showing original plats made and number of copies transmitted to the General Land Office and to the district land offices since June 30, 1869.

C.—Showing the number of lineal miles run, the rates per mile, and the total cost of surveys, during the fiscal year ending June 30, 1870.

D.—Showing the number and designation of the townships surveyed, and the number of acres therein, during the fiscal year ending June 30, 1870.

E.—Showing the amount and condition of appropriations, and the amounts paid on contracts for surveys, during the fiscal year ending June 30, 1870.

F.—Estimates of amounts required for the survey of public lands in this district, and for salaries and incidental expenses, for the year ending June 30, 1872.

I also have the honor herewith to transmit a map of Washington Territory, showing the progress and proposed extension of public surveys, and also representing the topographical notations, political subdivisions, and other important features, all which have been compiled in this office from actual surveys and the most reliable data obtained from other sources.

No deposits by individuals for the survey of mineral lands in this district have been made during the past fiscal year.

A supplemental report, embracing the subjects mentioned in your letter of March 30, 1870, is also herewith transmitted.

I have the honor to be, very respectfully, your obedient servant,

E. P. FERRY,

Surveyor General Washington Territory.

Hon. JOSEPH S. WILSON,

Commissioner General Land Office, Washington City, D. C.

A.—Statement showing the amount, character, and condition of the public surveys in Washington Territory, contracted for since the date of the last annual report.

No. of contract.	Date of contract.	Names of deputies.	Surveys embraced in contract.	Estimated number of miles.	Rate per mile.	Estimated amount.	Remarks.
106	1869. July 15	E. Richardson	Exteriors of township 5 north, of ranges 16 and 17 east, and township 6 north, of ranges 17, 18, 19, 20, and 21 east.	90	\$12	\$1,080	Complete.
		D. F. & C. N. Byles.	Subdivisions of township 5 north, of ranges 16 and 17 east, and township 6 north, of ranges 17, 18, 19, 20, and 21 east.	480	10	4,800	Complete.
107	July 18	.....	Exteriors of townships 13 and 14 north, of ranges 8 and 9 west.	48	12	576	Complete.
			Subdivisions of township 13 north, of range 8 west, and 14 north, of range 9 west.	125	10	1,250	Finished, and township 14, range 8 west, in excess.
108	July 20	L. P. Beach	Sixth standard parallel, through ranges 31, 32, 33, 34, 35, 36, 37, 38, and 39 east.	54	15	810	Complete.
			Eighth standard parallel, through ranges 39 and 40 east.	12	15	180	Range 40 omitted.
			Ninth standard parallel, through ranges 39 and 40 east.	12	15	180	Range 40 omitted.
			Colville guide meridian, through townships 25 to 36 north, inclusive.	72	15	1,080	Complete.
			Exteriors of townships 33, 34, 35, and 36 north, of ranges 39 and 40 east; township 17 north, of range 21 east, and township 14 north, range 18 east.	108	12	1,296	Range 40 omitted.
			Subdivisions of townships 35 and 36 north, of ranges 39 and 40 east, and township 14 north, of range 18 east.	300	10	3,000	Range 40 omitted, and townships 33 and 34, range 39 east, surveyed in lieu.
(*)	Sept. 21	A. J. Treadway....	Subdivisions of nine sections in township 15 north, of range 2 west.	12	10	120	Complete.

* Special instructions.

E. P. FERRY,

Surveyor General Washington Territory.

SURVEYOR GENERAL'S OFFICE,

Olympia, Washington Territory, August 10, 1870.

B.—Statement showing original plats made and number of copies transmitted to the General Land Office and to the district land offices in Washington Territory, since the date of the last annual report, June 30, 1869.

No. of exterior bound- aries.	No. of townships sub- divided.	Description of plats.	Original plats.	General Land Office copies.	District land office copies.	Total.	When trans- mitted.
1	1	Township 5 north, range 17 east.....	1	1	1	3	Sept. 21, 1869.
1	1	Township 6 north, range 20 east.....	1	1	1	3	Sept. 21, 1869.
1	1	Township 15 north, range 2 west.....	1	1	1	3	Oct. 2, 1869.
1	1	Township 18 north, range 1 east.....	1	1	1	3	Oct. 7, 1869.
1	1	Township 6 north, range 19 east.....	1	1	1	3	Oct. 21, 1869.
1	1	Township 5 north, range 16 east.....	1	1	1	3	Oct. 21, 1869.
1	1	Township 6 north, range 17 east.....	1	1	1	3	Nov. 18, 1869.
1	1	Township 6 north, range 18 east.....	1	1	1	3	Nov. 18, 1869.
1	1	Township 13 north, range 8 west.....	1	1	1	3	Dec. 7, 1869.
4	1	Townships 13 and 14 north, ranges 8 and 9 west.....	1	1	1	3	Dec. 7, 1869.
1	1	Township 14 north, range 18 east.....	1	1	1	3	Dec. 15, 1869.
1	1	Township 17 north, range 21 east.....	1	1	1	3	Dec. 15, 1869.
1	1	Township 14 north, range 8 west.....	1	1	1	3	Jan. 21, 1870.
1	1	Township 14 north, range 9 west.....	1	1	1	3	Jan. 21, 1870.
1	1	Township 33 north, range 39 east.....	1	1	1	3	Mar. 8, 1870.
1	1	Township 34 north, range 39 east.....	1	1	1	3	Mar. 8, 1870.
1	1	Township 35 north, range 39 east.....	1	1	1	3	Mar. 8, 1870.
1	1	Township 36 north, range 39 east.....	1	1	1	3	Mar. 8, 1870.
1	1	Township 6 north, range 21 east.....	1	1	1	3	Mar. 26, 1870.
		Sixth standard parallel, through ranges 31 to 39 east, in- clusive.	1	1	1	3	Jan. 19, 1870.
		Colville guide meridian, through townships 25 to 36 north, inclusive; also, eighth and ninth standard parallels, through range 39 east.	1	1	1	3	Jan. 19, 1870.
1	1	Township 6 north, range 18 east.....	1	1	1	3	June 30, 1870.
CLAIM PLATS.							
		Township 13 north, range 8 west.....	1	1	1	3	June 16, 1870.
		Township 14 north, range 8 west.....	1	1	1	3	June 16, 1870.
		Township 14 north, range 9 west.....	1	1	1	3	June 16, 1870.
MISCELLANEOUS.							
		Map of Washington Territory.....	1	1	1	3	
		Map of western portion of Washington Territory.....	1	1	1	3	
		Sundry maps, diagrams and tracings for various public offices.	18	18	18	54	
16	17	Total.....	45	26	20	91	
		Total number of plats made.....					

E. P. FERRY,
Surveyor General Washington Territory.

SURVEYOR GENERAL'S OFFICE,
Olympia, Washington Territory, August 10, 1870.

C.—Statement showing the number of lineal miles run, the rates per mile, and the total cost of surveys in Washington Territory during the fiscal year ending June 30, 1870.

Description.	Distance.	Rate per mile.	Total cost.
Standard lines.....	<i>Ms. chs. lks.</i> 66 00 00	\$15	\$990 00
Meridian lines.....	72 00 00	15	1,080 00
Township lines.....	203 59 50	12	2,444 92
Section and meander lines.....	866 41 28	10	8,665 16
Total number of miles run.....	1,208 20 78		
Total cost of surveys.....			13,180 08

E. P. FERRY,
Surveyor General Washington Territory.

SURVEYOR GENERAL'S OFFICE,
Olympia, Washington Territory, August 10, 1870.

D.—Statement showing the number and designation of the townships and the number of acres surveyed in Washington Territory during the fiscal year ending June 30, 1870.

No.	Townships surveyed.	Areas.	Remarks.
1	Township 5 north, range 16 east.....	23, 105. 97	Complete.
2	Township 5 north, range 17 east.....	23, 075. 11	Complete.
3	Township 6 north, range 17 east.....	17, 768. 13	Partially.
4	Township 6 north, range 19 east.....	23, 909. 28	Complete.
5	Township 6 north, range 20 east.....	23, 942. 21	Complete.
6	Township 6 north, range 21 east.....	23, 093. 25	Complete.
7	Township 13 north, range 8 west.....	17, 218. 53	Partially.
8	Township 14 north, range 8 west.....	12, 222. 64	Partially.
9	Township 14 north, range 9 west.....	15, 972. 47	Partially.
10	Township 14 north, range 18 east.....	23, 624. 19	Complete.
11	Township 15 north, range 2 west.....	5, 760. 00	9 sects. complete.
12	Township 33 north, range 39 east.....	11, 526. 28	Partially.
13	Township 34 north, range 39 east.....	23, 048. 62	Complete.
14	Township 35 north, range 39 east.....	23, 075. 54	Complete.
15	Township 36 north, range 39 east.....	17, 248. 77	Partially.
16	Township 6 north, range 18 east.....	22, 492. 68	Complete.
	Amount surveyed.....	304, 483. 67	
	Amount previously surveyed.....	5, 258, 694. 10	
	Total number of acres surveyed in the Territory.....	5, 563, 177. 77	

E. P. FERRY,
Surveyor General Washington Territory.

SURVEYOR GENERAL'S OFFICE,
Olympia, Washington Territory, August 10, 1870.

E.—Statement showing the amount and condition of appropriation, and the amounts paid on contracts for surveys made, for the fiscal year ending June 30, 1870.

No. of contract.	Name of deputy.	Estimated amount.	Amount paid on contracts.
106.....	Edwin Richardson	\$5, 880 00	\$5, 153 63
107.....	D. F. & C. N. Byles	1, 826 00	2, 463 01
108.....	Lewis P. Beach	6, 546 00	5, 443 25
(Special)	A. J. Treadway	120 00	120 19
	Total.....	14, 372 00	13, 180 08
	Add amount of excess last year.....		280 50
	Aggregate.....		13, 460 58

Amount of appropriation for the fiscal year ending June 30, 1870.....	\$15, 000 00
Deduct amount paid on contracts	13, 460 58
Balance unexpended	1, 539 42

E. P. FERRY,
Surveyor General Washington Territory

SURVEYOR GENERAL'S OFFICE,
Olympia, Washington Territory, August 10, 1870.

No. 17 O.—Report of the surveyor general of Oregon.

SURVEYOR GENERAL'S OFFICE,
Eugene City, Oregon, August 26, 1870.

DEAR SIR: I have the honor herewith to transmit the following tabular statements, showing the business of this office for the year ending June 30, 1870, together with a diagram map of this district:

A.—Statement of original plats of public surveys and copies transmitted since June 30, 1869.

B.—Showing surveying contracts made under appropriations for fiscal year ending June 30, 1870.

C.—Showing the townships surveyed since June 30, 1869, with area of public land.

D.—A statement of the salaries paid surveyor general and clerks in this office for the fiscal year ending June 30, 1870.

E.—Showing the incidental expenses of this office for the year ending June 30, 1870; to whom money was paid, and for what.

F.—A statement of estimates of surveying and office expenses for the fiscal year ending June 30, 1872.

During the fiscal year ending June 30, 1870, I succeeded in extending the surveys into the valley of John Day, which required the projection of a standard line 102 miles east from the Des Chutes guide meridian.

In locating this standard and the position of this valley, in order to put the lands under contract, I made use of the survey line of the Dalles military road as a reconnaissance. You will observe that the W. V. & C. M. Road line has been projected, upon the accompanying diagram, as far eastward as Camp Harney. Using this line also as a reconnaissance, we have the true position of the great valley of Harney Lake, where settlements are tending with considerable rapidity since the termination of Indian hostilities last fall.

Surveys have been extended along the lines of the different military roads as rapidly as other interests and the amount of appropriations would admit. These companies have been clamorous and urgent for the extension of surveys, in order that the lands granted by Congress for construction of those roads penetrating into the interior may be made available to the purposes for which they were granted.

Such surveys have been located in such manner as best to effect the purposes of the grants and, at the same time, meet the wants of settlements along the lines of these roads; and these efforts, so far, have been both successful and satisfactory.

During the year there have been surveys executed in Southeastern Oregon, in the valleys of Klamath Lake and Sprague's River; in Eastern and Middle Oregon, in the valleys of John Day, Crooked River, and the Des Chutes; in Northeastern Oregon, on the Columbia River; and in Western Oregon, northwest of Portland and on the waters of Yaquina: and arrangements have been effected for the prosecution of surveys in Southwestern Oregon, on the waters of Coos and Coquille.

It is, in my judgment, eminently necessary, in view of the various interests affected by the extension of public surveys in this district, that appropriations be kept up at least to the present figures, and it would be far better at the estimate which I have made. There are numerous new settlements being formed far beyond all surveys. Those interested in the various road grants consider the Government in honor bound to render those lands available, since upon this faith they have advanced their means and created debts in carrying out those enterprises. In addition to these interests there are railroad grants which will require great extensions of the public surveys to meet; and ere long it will be necessary to push those surveys rapidly in order that the important purposes of those grants may be secured.

The lines of proposed railroads in this State will appear upon the diagram when they shall have been specifically located and authenticated data thereof furnished this office.

I have not deemed it necessary to proceed with more general remarks upon the various interests of the State, as this is the statistical year of the Republic, and material for all purposes will be collected from more numerous and reliable sources than I can command.

I am, therefore, very respectfully, your most obedient servant,

E. L. APPLGATE,
United States Surveyor General.

Hon. JOS. S. WILSON,

Commissioner of the General Land Office, Washington City, D. C.

A.—Statement of original plats of public surveys and copies transmitted since June 30, 1869.

Contract.	Contractors.	Lines.	Townships.	Ranges.	Plats made.			
					Orig'l.	Comm'r.	Register.	Total.
127	Mar. 2, 1869	McClur & Meldrum	Between 10 and 11 south .. Extérieurs..... Extérieurs..... Extérieurs..... Subdivisions..... Subdivisions..... Subdivisions..... Standard parallel .. Extérieurs..... Extérieurs..... Extérieurs..... Extérieurs..... Extérieurs..... Subdivisions..... Subdivisions..... Subdivisions..... Extérieurs.....					

Subdivisions.....	6 and 7 south.....	17 east.....	2	9	8	6
Subdivisions.....	18, 19, 20, 21, and 22 south.....	11 east.....	5	5	5	15
Subdivisions.....	18 south.....	12 east.....	1	1	1	3
Subdivisions.....	20 south.....	10 east.....	1	1	1	3
Subdivisions.....	24 south.....	6 and 7 east.....	2	2	2	6
Subdivisions.....	3 north.....	21, 22, and 23 east.....	3	3	3	9
Subdivisions.....	4 north.....	22, 23, 24, 25, and 26 east.....	5	5	5	15
Subdivisions.....	5 north.....	25 and 26 east.....	2	2	2	6
Subdivisions.....	5 south.....	17 east.....	1	1	1	3
Total.....	.....	.....	.....	.....	.....	226

B.—Surveying contracts made under appropriation for fiscal year ending June 30, 1870.

Contract.	No.	Date.	Contractors.	Location and description of lines.	Estimated No. of miles.	Amount surveyed.			Gross amount.	Remarks.
						Standard parallels at \$15 per mile.	Exteriors, at \$12 per mile.	Subdivisions, at \$10 per mile.		
129	June 5, 1869	J. H. McClung, J. W. Meldrum.	Standard parallel from corner to townships 15 and 16 south, ranges 17 and 18 east—east 6 miles; and west through ranges 17, 16, 15, and 14 east; also, the standard parallel from corner to townships 13 and 14 south, ranges 14 and 15 east; west through range 14 east; the exterior and subdivisional lines of townships 14 and 15 south, ranges 15, 16, 17, and 18 east; 14 south, range 14 east, and exterior lines of 15 south, range 14 east.	672	M. ch. tk. 36 00 00	M. ch. tk. 95 56 63	M. ch. tk. 538 29 94	\$7, 072 23	Contract closed, account transmitted, and reported for payment.	
130	June 8, 1869	H. F. Stratton, William B. Pengra.	Exterior and subdivisional lines of townships 27, 28, and 29 south, range 7 east; 27 and 28 south, range 8 east; 32, 33, and 34 south, range 9 east; 32 and 33 south, range 12 east; 32, 33, and 34 south, range 13 east; 34 south, range 14 east; and subdivisional lines of 29 south, range 8 east.	1, 003	.....	168 08 55	788 62 64	9, 905 11	Contract closed, account transmitted, and reported for payment.	
131	June 8, 1869	D. P. Thompson, B. J. Pengra, J. B. David.	Standard parallel between townships 12 and 13 south, through ranges 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, and 34; exterior and subdivisional lines of township 12 south, ranges 31, 32, and 33 east; 13 south, ranges 29, 30, 31, 32, 33, and 34 east; 18, 19, 20, 21, and 22 south, range 11 east; 24 south, ranges 6 and 7 east; 29 south, range 10 east; 18 south, range 12 east; 5 south, range 16 east; 6 and 7 south, range 17 east; 3 north, ranges 21, 22, and 23 east; 4 north, ranges 23, 24, 25, and 26 east; 5 north, range 26 east; and subdivisional lines of 4 north, range 22 east; 5 north, range 25 east; and 5 south, range 17 east.	1, 879	102 00 00	300 77 64	1, 617 28 89	21, 315 25	Contract closed, account transmitted, and reported for payment.	
132	Dec. 7, 1869	H. J. Stevenson, M. L. McCall.	Exterior and subdivisional lines of township 7 north, range 5 west; also, an island in the Willamette Slough, in sections 4 and 9, township 3 north, range 1 west.	74	.....	.....	.....	.....	.....	Execution of work not entered upon.
133	Mar. 7, 1870	James Aiken.....	Exterior and subdivisional lines of fractional townships 24, 26, and 27 south, range 12 west; and subdivisional lines of fractional townships 26 and 27 south, range 13 west.	230	.....	.....	.....	.....	.....	.....
134	May 24, 1870	George Mercer.....	Exterior and subdivisional lines of township 11 south, range 8 west, and subdivisional lines of township 11 south, ranges 9 and 11 west.	96	.....	.....	.....	.....	.....	.....

C.—Townships surveyed since June 30, 1869, with area of public land.

Number.	Description.		Area.	Number.	Description.		Area.
	Township.	Range.			Township.	Range.	
1	14 south	14 east	22,464.04	34	12 south	31 east	11,518.78
2	14 south	15 east	22,576.70	35	12 south	32 east	11,523.36
3	14 south	16 east	22,622.04	36	12 south	33 east	15,362.00
4	14 south	17 east	22,890.21	37	12 south	34 east	11,527.58
5	14 south	18 east	23,027.03	38	13 south	29 east	23,101.10
6	15 south	15 east	22,968.15	39	13 south	30 east	23,082.92
7	15 south	16 east	23,021.67	40	13 south	31 east	23,044.10
8	15 south	17 east	23,052.03	41	13 south	32 east	23,056.80
9	15 south	18 east	23,023.83	42	13 south	33 east	23,101.25
10	8 south	17 east	22,893.74	43	13 south	34 east	23,082.50
11	9 south	14 east	21,734.58	44	5 south	16 east	22,446.50
12	9 south	15 east	23,050.23	45	5 south	17 east	22,539.53
13	9 south	16 east	23,075.20	46	6 south	17 east	17,067.19
14	9 south	17 east	22,902.11	47	7 south	17 east	22,240.24
15	10 south	14 east	23,038.05	48	18 south	11 east	21,811.24
16	10 south	15 east	22,387.93	49	19 south	11 east	18,092.68
17	10 south	16 east	22,977.01	50	20 south	11 east	19,155.04
18	10 south	17 east	22,937.75	51	21 south	11 east	22,892.65
19	27 south	7 east	11,360.48	52	22 south	11 east	22,861.17
20	28 south	7 east	21,609.00	53	18 south	12 east	23,007.33
21	29 south	7 east	23,074.24	54	20 south	10 east	23,033.39
22	27 south	8 east	20,630.22	55	24 south	6 east	13,205.10
23	28 south	8 east	23,106.78	56	24 south	7 east	11,288.92
24	29 south	8 east	15,229.27	57	3 north	31 east	13,567.00
25	32 south	9 east	22,588.26	58	3 north	22 east	22,930.41
26	33 south	9 east	22,962.54	59	3 north	23 east	23,073.46
27	34 south	9 east	23,065.28	60	4 north	22 east	2,345.65
28	32 south	12 east	14,732.08	61	4 north	23 east	11,199.50
29	33 south	12 east	23,046.93	62	4 north	24 east	17,096.79
30	32 south	13 east	16,611.34	63	4 north	25 east	20,055.83
31	33 south	13 east	23,063.08	64	4 north	26 east	23,125.62
32	34 south	13 east	11,530.72	65	5 north	25 east	1,160.18
33	34 south	14 east	23,092.44	66	5 north	26 east	10,482.76
Total area							1,299,692.33

NOTE.—Nos. 1 to 18, inclusive, were surveyed by Messrs. McClung and Meldrum; Nos. 19 to 33, inclusive, by Messrs. Stratton and Pengra, and Nos. 34 to 66, inclusive, by Messrs. Thompson, Pengra, and David.

D.—Salaries paid the surveyor general and clerks for fiscal year ending June 30, 1870.

Name.	Nativity.	Occupation.	Time of service.	Amount paid.
E. L. Applegate	Missouri	Surveyor general	Entire year	\$2,500 00
Joel Ware	Ohio	Chief clerk	Entire year	1,630 60
George Stowell	Indiana	Draughtsman	Entire year	1,400 00
Bell Jennings	Pennsylvania	Copying clerk	1 July, 1869, to 30 April, 1870, inclusive	998 90
William Gale	Kentucky	Copying clerk	1 May to 30 June, 1870, inclusive	201 10
Total				6,700 00

E.—Statement of incidental expenses for fiscal year ending June 30, 1870.

Date of voucher.	To whom made payable.	For what expended.	Amount.
September 30, 1869	A. V. Peters & Co.....	Office rent.....	\$75 00
September 30, 1869	Joseph D. Myers.....	Messenger.....	150 00
September 30, 1869	A. S. Patterson.....	Postage and box rent.....	111 00
December 31, 1869	A. V. Peters & Co.....	Office rent.....	75 00
December 31, 1869	J. D. Myers.....	Messenger.....	150 00
December 31, 1869	John Wand.....	Map cases.....	24 00
December 31, 1869	James F. Brown.....	Stationery.....	25 00
December 31, 1869	Jerry Lucky.....	Wood.....	60 00
December 31, 1869	H. R. Kincaid.....	Printing.....	20 00
December 31, 1869	A. V. Peters & Co.....	Sandrics for office.....	12 00
December 31, 1869	A. S. Patterson.....	Postage.....	10 00
March 31, 1870	J. D. Myers.....	Messenger.....	150 00
March 31, 1870	A. V. Peters & Co.....	Office rent.....	75 00
March 31, 1870	J. B. Underwood.....	Tracing cloth.....	32 00
March 31, 1870	A. S. Patterson.....	Postage and box rent.....	10 00
June 30, 1870	James F. Brown.....	Stationery.....	110 00
June 30, 1870	A. S. Patterson.....	Postage.....	12 00
June 30, 1870	A. V. Peters & Co.....	Stationery.....	21 13
June 30, 1870	A. V. Peters & Co.....	Office rent.....	75 00
June 30, 1870	J. D. Myers.....	Messenger.....	150 00
Total.....			1,247 13

F.—Estimate of surveying and office expenses for fiscal year ending June 30, 1872.

Office expenses:

Compensation of surveyor general.....	\$2,500 00	
Compensation of chief clerk.....	1,600 00	
Compensation of draughtsman.....	1,400 00	
Compensation of 2 clerks, at \$1,200.....	2,400 00	
Incidental expenses, including messenger rent, &c.....	2,000 00	
		\$9,900 00

Surveying service:

100 miles standard parallel, at \$15.....	1,500 00	
100 miles standard parallel, at \$18.....	1,800 00	
400 miles exteriors, at \$12.....	4,800 00	
400 miles exteriors, at \$15.....	6,000 00	
2,000 miles subdivisions, at \$10.....	20,000 00	
2,000 miles subdivisions, at \$12.....	24,000 00	
		58,100 00

Total..... 68,000 00

No. 17 P.—Report of the surveyor general of California and Arizona.

UNITED STATES SURVEYOR GENERAL'S OFFICE,
San Francisco, August 1, 1870.

SIR: In compliance with your special instructions, I have the honor to submit herewith, in duplicate, my annual report concerning the surveying service in California and Arizona during the fiscal year ending 30th June, 1870.

I also forward tabular statements to accompany the report, as follows:

A.—Statement of contracts for surveys of public lands during the year ending 30th June, 1870, payable out of the public appropriations.

B.—Statement of contracts for surveys of public lands payable out of special deposits made with the United States assistant treasurer in San Francisco, under section 10 of act of May 30, 1862.

C.—Statement of surveys of mines in California during the year ending June 30, 1870, in conformity with the law of 26th July, 1866.

D.—Statement showing the number of miles surveyed in California and Arizona up to June 30, 1870.

E.—Account of appropriations for surveys of public lands to June 30, 1870.

F.—Account of special deposits with the United States assistant treasurer for the survey of public lands according to the act of Congress of May 30, 1862.

G.—Account of special deposits with the assistant treasurer for the surveys, office work, and advertising of mining claims during the year ending 30th June, 1870.

H.—Account of appropriation for pay of surveyor general of California and Arizona.
 I.—Account of appropriation for pay of clerks and draughtsmen in the office of surveyor general of California and Arizona for the fiscal year 1869-70.

J.—Account of appropriation for rent of office and other incidental expenses for the year ending June 30, 1870.

K.—Statement of transcripts of field-notes of public surveys sent to the Commissioner of the General Land Office during the year ending June 30, 1870.

L.—Statement of transcripts of decrees of court, descriptive notes, &c., relating to private land claims and accompanying plats for patent transmitted to the Commissioner of the General Land Office during the fiscal year ending 30th June, 1870.

M.—Statement of plats made in office in 1869-70.

N.—List of lands surveyed in California and Arizona during the year ending 30th June, 1870.

O.—Estimates for the surveying service in California for the fiscal year ending June 30, 1872.

P.—Account of deposits for surveys of private land claims during the year ending June 30, 1872.

Referring to my report of last year (pages 356 and 357 of the printed report of the Commissioner of the General Land Office) explaining the condition and needs of this office in relation to its clerical force, I have now to repeat that for the three months immediately preceding the close of the last fiscal year there were no public appropriations available for clerks and draughtsmen in this office. What work was done was paid for by special deposits under the laws of May 30, 1862, and the mining survey law of June 26, 1866, and other private sources.

A partial relief was experienced on the commencement of the new fiscal year, 1st July, 1869, when the very small appropriation for that year became available, and enabled me to employ one bookkeeping clerk and one draughtsman, at the same time doing myself the work of another clerk, in addition to my general supervisory duties. Much of the work still necessarily remained in arrears, the clerical and draughtsman's force not being adequate for more than one-third of the work to be done. The special deposits made up for a part of the deficiency, but they came at such uncertain times and irregular amounts as to make it impossible to organize, upon their basis, any regular and permanent system of work. Men who are employed this week and discharged the next are not always of the most desirable class, and do not stay long enough to become expert in their duties.

An immense amount of work, of the class of private land surveys and swamp-land adjudications, was pressing for immediate attention, much of it requiring the personal attention of the surveyor general, while his time was necessarily absorbed in the performance of mere mechanical work, such as the ordinary routine correspondence and conversational explanations, which might have been done by a clerk.

Early in January, by the good fortune of a special deposit from the Central and Western Pacific Railroad Companies, which was applicable for the general duties of the office, (other special deposits being tied up to the particular work for which the deposit was made,) I was enabled to employ a corresponding clerk and other assistance in the draughting room. This enabled me to devote more attention to private land claims and swamp lands, and gradually to bring up the arrears of the work. The deposit alluded to was not sufficient to keep a full force for the remainder of the year, but it was hoped that it would reach until Congress could pass a supplementary appropriation, which was done late in April. This enabled us to go forward with something like system and proper division of labor. The archives clerk and two special temporary draughtsmen were added to the force. The arrears of the work have been nearly brought up to the point at which the work of each month is no more than can be properly and promptly performed by the force employed.

The appropriations for the office work during the present fiscal year are sufficient, with the aid of such private deposits as pay for their own work, to meet the fair demands of the service, unless, perhaps, an exception might be made in relation to the supervision of the swamp-land department, of which I will speak elsewhere.

During the past fiscal year the rooms occupied by this office have been twice changed. The rooms of the Pioneer Association were needed for their own use. In the endeavor to obtain a suite of rooms at the same yearly rent, although sufficient space was found, the rooms were so situated in a third story of a large block of buildings occupied for commercial purposes, that the immensely valuable body of colonial and land commission archives, as well as the maps and other archives of more modern date, were found to be exposed to all the varied fire risks of eight or ten different tradesmen occupying the rooms underneath. No building in the city, belonging to the United States, had any suitable rooms vacant. Application was therefore made to the honorable Commissioner of the General Land Office for an increased allowance for rent, which was favorably responded to; and we were so fortunate as to procure the greater portion of the third story of the new building of the Pacific Bank at a rent within the limits allowed by the Commissioner.

This building is occupied only for the purposes of the bank and for private offices of attorneys and land agents, and the fire risks are otherwise eminently favorable. For the purposes of this office the location is central, the rooms are well lighted and ventilated, and easily warmed, sufficiently spacious for the storage of our bulky draughting tables, map cases, and book cases, and conveniently arranged for the separation and intercommunication of the several divisions of work. Not a single item of complaint can be urged against them except their elevation above the ground, and that cannot be remedied except by doubling the rent.

The efficiency and promptness of the service is greatly promoted by the convenience of the new rooms.

The duties of the office require the services of a keeper of the Spanish, or Mexican, and land commission archives, who also acts as chief clerk of the private land claim division; a corresponding clerk, to relieve the surveyor general of the routine of daily correspondence, who also assists the chief clerk of land claims; a bookkeeping and accountant clerk; a field-note and copying clerk; three draughtsmen on public work, and one on maps of private land claims, who is paid by the owners of the claims, and not by public appropriation.

The condition of the office at present is in marked contrast with its condition a year ago, and this contrast is due, not to a change of individuals, but to a proper supply of means. The work goes on promptly and efficiently, the employes are capable and industrious, and thoroughly trained to their special duties. As proof of this I need only ask the honorable Commissioner to watch the weekly receipts during the past three months at the General Land Office of returns and correspondence from this office, and that he will also remember that those returns represent but half the work and correspondence of this office; the other half appearing at the eight local land offices, (now nine,) a State land office for swamp land matters, and among the general public whose demands are neither few nor small nor far between.

I have set forth in more than usual detail the present condition of this office, and placed it in contrast with what it was during the latter part of the preceding and the early part of the past fiscal year, because many persons have made loud complaints against the office for being *slow*, and have been more ready to impute the fault to the individual in charge than to the circumstances by which he was surrounded and which he could not control. All that I ask to vindicate myself against such an imputation is, with present facilities, sufficient time to show what can be done *with* means in contrast with what could not be done without means.

FIELD WORK IN CALIFORNIA.

Early in the fiscal year, as noticed in my last annual report, I had let a series of contracts extending throughout the mining foot-hills. The work under these contracts has been nearly all performed. A part of the plats is already in the local land office. The returns of the other townships have nearly all come in, and the plats are being made. The work on a few townships, which was unavoidably delayed, will soon be completed. The work comprises five entire townships and five fractional townships in Tulare County, seven townships and three fractional townships principally in Mariposa County, eight townships and one fractional township in Tuolumne County, ten townships and four fractional townships in Calaveras County, ten townships and three fractional townships in Amador County, seven townships in El Dorado County, thirteen townships and nine fractional townships in Shasta County, (some in this county contracted for last year, but most of the work done in this year,) portions of four townships in Butte County. These comprise most of the work done in the mining counties. Two townships, 20 and 21 north, range 4 east, of Mount Diablo meridian, in Butte County, which were suspended on account of the dissatisfaction of the miners with the segregation by the deputy of the mineral lands from the agricultural, have been restored to the local land office at Marysville, with the plats so marked as to require proof before the register and receiver of the character of the tracts to be entered, whether mineral or agricultural.

Subdivision surveys have also been made of three townships in Lassen County, three in Plumas County, six in Mendocino County, three in Lake County, two in Sutter County, two in Sonoma County, one in Colusa County, two in Sacramento County, thirteen in San Luis Obispo County, one in Fresno County, and six in San Diego County. Many of these were only fractional townships.

Besides the above named there have been subdivided twenty-four townships, or fractional townships, in various parts of the State, on private deposits made under the provisions of the law of May 30, 1862.

Among the contracts of the past year is one for the subdivision of several townships near Sacramento, containing much more swamp than dry land, but which it is desirable to have returned to the land office, so that the listing over to the State can be completed. The returns will be made during the coming autumn.

Considerable eagerness has been shown by settlers in the mining district recently

subdivided to avail themselves of the privilege thereby afforded for securing permanent titles. In Shasta County some dissatisfaction was expressed, at a public meeting of miners, against the classification by the United States deputy surveyor of the mineral and agricultural lands. The deputy surveyor offered to correct his notes wherever good and sufficient reasons could be shown by the miners, and asked to have an expert examiner sent, at his expense, to review his work on the ground. But as a proper person for that duty was not then at my disposal, I sent no one. I learned afterward that the opposition came rather from the ditch owners than the miners. It is hoped that the new bill passed at the recent session of Congress will allay much of this kind of complaints, and that a greater familiarity with the workings of laws hitherto untried will show that all classes can have their rights secured by a little forbearance and a proper observance of the regulations prescribed by the law. I have since learned that the miners have acquiesced in the segregation and are entering their lands at the land office.

SWAMP AND OVERFLOWED LANDS.

Several complicated cases of swamp land issues between the State and Federal authorities, which had been the subject of examination by this office during the previous year, under the provisions of the fourth section of 23d July, 1856, were sent up during the fiscal year just closed, for the consideration of the honorable Commissioner of the General Land Office. The lands in dispute were situated in Colusa, Yolo, Sacramento, and San Joaquin Counties. These cases embraced land now of considerable value, and presented a great variety of questions arising under the laws of 28th September, 1850, and 23d July, 1856. Some of these questions were doubly complicated by the peculiar climate and meteorology of California, as well as by relations growing out of Mexican land titles.

California contains a large body of land along her two principal rivers, the Sacramento and San Joaquin, legitimately within the provisions of the law of 1850, and for which, by State legislation, a very imperfect system of reclamation has been provided. But in consequence of the wise restriction, by the General Government, of the sale of public lands to *bona fide* occupants of 160 acres each, and stopping the sales of land in large bodies, speculators in land have found it convenient to use the machinery of State legislation, which is much better adapted to their purposes.

As the title to the swamp lands is vested in the State, and the State sells them at \$1 per acre, of which four-fifths may remain on credit, and does not restrict the buyers as to quantity, nor require any actual residence, and only a nominal amount of reclamation, it is plain that a temptation exists to get lands classified as swamp which are not legitimately, and many a wet meadow is made the subject of judicial scrutiny under the provisions of the fourth section of the act of 23d July, 1856.

The State law of 28th March, 1853, while it gave every facility to purchasers of large bodies of lands, gave no protection whatever to actual settlers upon lands segregated by the United States deputies as firm or dry land, but which, on application of a swamp land purchaser, might be segregated as swamp land by the county surveyor without notice to the dry land occupant, or any chance given to him for preëmption in the State land office. Several cases came under my notice in the process of adjudicating these questions, where the land in dispute was found to be the homestead of a widow and her orphan children, and that it was attempted to be taken from them under cover of the State laws.

This opprobrium of the State legislation has been abolished at the late legislature by the passage of a law which requires notice of the survey to be given to the actual settler, and prohibits the issue of a patent to any other than the actual occupant, until he has had notice, and the privilege of preëmption open to him for ninety days after the survey.

Another temptation exists among actual settlers to seek shelter under the State title to swamp lands, for the purpose of avoiding the demands of the railroad companies for the odd sections.

In the high mountain districts, where dairy products and hay are the chief objects of attention, and not corn or small grains to any great extent, there are many narrow valleys which are annually overflowed by the melting snows, combined with warm rains, during a few weeks, or, perhaps, months. To grass crops the overflow, if regulated, is a benefit. It might prevent grain crops by retarding plowing till very late in the spring, and leaving too short a summer for the ripening of the grain. The owners of these lands hold them, and have them fenced generally in larger tracts than 160 acres.

They were originally settled by persons who took them up in small tracts for the purpose of cutting hay, when hay was worth \$50 to \$75 per ton, to take to the Washoe market. When such prices had ceased, the unstable settlers sold out to the more stable men, and sought for new adventures elsewhere.

The wiser few invested their savings in permanent improvements, buildings, fences, reservoirs, dams, and ditches, intended sometimes to flood and sometimes to drain their lands.

These men naturally seek shelter under the State laws, and hope to see their flat lands classified as swamp and overflowed.

There are extensive tracts in the larger valleys in the heart of the State which are overflowed in a majority of seasons by the smaller tributaries of the large rivers. They are thus undoubtedly unfitted for the cultivation of the staple crops of grain without reclamation of some sort, although it may be but slight; and this fact fully proved, places them under the provisions of the swamp land act. At the same time, it cannot be denied that these same lands, being in the vicinity of railroads, of sea-ports, or river landings, and of large tracts, are still, even if not artificially reclaimed, immensely valuable for pasturage and for grass crops, and it becomes a serious question whether such lands belong to that worthless class which the Government intended to donate for the mere consideration of their reclamation.

The right of the State to some tracts of land segregated as dry land by the United States deputy surveyor, and as wet land by the State surveyor, has been contested by claimants to preempt the same lands under the seventh section of the act of July 23, 1866, on the ground of having purchased and possessed them in good faith, under a Mexican title, subsequently rejected or restricted in its boundaries.

The determination of the status of some of these lands has been rendered exceedingly difficult by the wide range of meteorological conditions in different seasons in California as compared with other States. The gauge of annual rain-fall varies from 4 or 5 inches in some years to 36 inches in others.

The year of 1850-'51 having been one of the dry years, proof of cultivation in that year without interruption from floods is not fair proof of what could or could not have been done in the wet years, or a majority of years. So, again, the proof of what may be done or not done on the wet lands of the lower valleys is not always applicable to a similar class of lands in the region of heavy snows and great altitudes, where constant frosts prevail.

It will thus be seen that the questions arising out of the application of the Arkansas act to the wet lands of California are both various and complicated; and while the necessity of some plain rule of determination is manifest, it is not an easy task to give expression to that rule in language that cannot be misunderstood, and which shall be applicable to all the various conditions of the problem.

The duty with which this office is charged under the provisions of the fourth section of the act of 23d July, 1866, of determining the true character of tracts of public land segregated as dry lands by the United States deputy surveyors, and claimed as swamp land by the State, is exceedingly onerous; added as it is to other duties, both executive and judicial, which are peculiar to the California office, and are either quite unknown or of little importance in the other public land States. I allude to the duty of supervising the surveys of the Mexican ranchos, interlocked as they are with the public land surveys, and of adjudicating the perplexing questions which arise in relation to their boundaries. The officer who has charge of these swamp land questions ought to visit the most important tracts in person, and hold his examination of witnesses at some place convenient to the parties in interest. The surveyor general has too much of other work to do to permit him to be absent on these errands. Consequently the inspection of the lands must be dispensed with, and the witnesses must come to San Francisco to be examined, of course, at the expense of the litigants.

The main swamp land district is at least 400 miles long; but there are considerable tracts in the extreme parts of the State, so that a journey of 200 to 350 miles must be taken with witnesses and their expenses to be paid. A deputy might perform the duty if a salary were provided for one; but none can be spared for this purpose, although the State has made provision for the traveling expenses of the United States surveyor general on these occasions. There are now seven local land offices in the State, excluding that of Aurora, and if they were charged with these adjudications the parties litigant and their witnesses would not generally have over 50 to 100 miles to travel. If the services were confided to a special deputy the courts could be held within the counties in which the lands lie.

RECLAMATION OF SWAMP LANDS.

Very considerable progress has been made during the past year in the practical reclamation of some of the large islands and other tracts of the swamp lands, at and near the mouths of the San Joaquin and Sacramento Rivers. Sherman's Island, containing some 14,000 acres, is said to be completely surrounded with a levee. The levees of Twichell's Island of 3,600 acres have also been recently completed at a cost, it is supposed, of about \$5 per acre for all the improvements. The same kind of improvement is in progress on parts of Brannon's, Roberts's, and Union Islands, and some of the tracts adjoining the mainland, one in particular of 4,000 acres near Napa Creek, above Mare Island.

It is intended at first to devote considerable areas of these reclaimed lands to the cultivation of the finer qualities of grass such as timothy, blue grass, clover, alfalfa,

the Mexican pin grass, &c., for pasturage and hay. These products will not be liable to be utterly ruined even by extraordinary floods which shall overtop the levee, but may rather derive benefit from light deposits of fine sediment.

In addition to these products, the lands will be extensively cultivated with grain and vegetable crops for city markets as well as for orchards, small fruits, and plantations of trees for fuel, fencing, rail ties, and other uses. The cultivation of rice has not yet been attempted on any large scale, but it cannot be long delayed when the Chinese population and the rich lands are brought together.

Very extensive works of reclamation are also going on among the tide lands in Alameda and Santa Clara Counties on the southeastern shore of the Bay of San Francisco. It is thought they may eventually be adapted to the cultivation of the sugar beet; but the experiment cannot be considered as yet fully tried.

Rice of the Carolina variety is now growing successfully on the farm of Hugh Davis, on Andrus Island, near Georgiana Slough, in Sacramento County. Mr. Gwynn, who sowed a bushel of the seed, had experience in rice cultivation in South Carolina, and thinks it will do well on the fresh-water tule lands where it is growing. It can be irrigated conveniently by opening the gates at high tide.

SURVEYS IN ARIZONA.

The surveys by Deputy Norris, under his contract of March 1869, were returned in October 1869, embracing township lines and subdivision lines near the Gila River, and south and east of the Pima reservation.

Before letting a new contract it became necessary to confer personally with Governor Safford, as to the part of the Territory most needing the service. This could not be done until early in January. At that time a contract was made with Peter R. Brady, a deputy surveyor, residing in the Territory, for the survey of townships and subdivision lines near the Gila, in continuation of Norris's work, and also near Tucson, to an amount not exceeding \$5,000, the amount appropriated for the last fiscal year. No returns have been made, nor have I been informed how much work has been done. A commission, as surveyor of mineral claims entered for patent, was also given to Deputy P. R. Brady for the third district, consisting of the county of Pima, and one to W. C. Collier for the first district, comprising the county of Yavapai, resident at Prescott.

No applications for surveys of mines have yet been made from Arizona Territory.

SURVEYS OF MINES.

The returns of only ten mines surveyed appear on the list for the past fiscal year. The plats of most of these have been forwarded to the General Land Office, and to the respective registers. The others are nearly ready to be transmitted. Two others have made deposits for survey, and for one of these the instructions for survey have been issued, and the deputy has been on the ground.

For the other they will be as soon as applied for. Six others have on file here the register's certificate which would entitle them to a survey, but no deposit has been made. For three others the register's certificates are incomplete and will be returned for correction. As to most of these unsurveyed mines the owners appear to be indifferent in regard to perfecting the proceedings.

It is probable that the recent subdivision surveys in the mining districts, and the recent amendments to the mining survey law will induce more applications for surveys of mines, especially of placer, gravel, and hydraulic mines.

SURVEYS OF MEXICAN RANCHOS.

An accession of means for additional clerical force has enabled me to commence a work which should have been done in this office several years since, but which is none the less needed now. I refer to the classification of the various cases of Mexican private land claims, and making a schedule showing the status of each survey, whether in this office or in the courts, as well as the number of those claims finally rejected, and the number and status of those still in the courts which have not yet attained to such final confirmation as to entitle them to a survey by this office.

The catalogue in the appendix to Judge Hoffman's Reports, vol. 1, shows that 813 claims were filed with the United States land commission. Of these our records show that 276 are already patented, (August 17, 1870,) leaving 537 to be accounted for. Of these at least 167 appear by Judge Hoffman's schedule, which was published in 1861, and by other data, to have been finally rejected, discontinued, or lost for want of appeal. There are still in the courts 109 which have not yet attained by final confirmation to the status of a survey. Some further scrutiny is needed to determine their exact status in the courts. Probably many of them need only some slight attention on the part of the owners or attorneys to perfect the final decrees or dismissals of appeal, and file the necessary certified copies in this office.

Besides those patented, there have been surveyed, or are entitled to a survey, 261 claims. Of these, 113 have been sent up to the General Land Office for adjudication, and, if approved, for patent. There may have been a larger number sent up. The number is subject to correction. Our earlier records are obscure on that point, and the number given is from the printed annual reports as far back as we have them.

There remain, then, of the finally confirmed claims, 148, nearly all of which are surveyed, and of which the plats and papers are not yet sent up to the General Land Office. Of these a part (not yet ascertained, but probably about half) have been called into court under the act of 14th June, 1860, on objections to the survey, and still remain there. The other part, probably 70 or 80, still remain under the control of this office, in various stages of progress. They may be classed under several heads, as follows:

First. Simple cases, which have passed through the courts with final approval of survey, or which, not having been in the courts, require only to be examined in this office as to their conformity to decrees and original title papers, and to be sent up with the Surveyor General's opinion. This class of cases is now being rapidly reduced.

Second. Complicated cases, of which the plats have been regularly advertised, and to which objections have been filed, presenting questions of interference with coterminous claims, or with settlers, or land claimed as public, or of boundaries with which the claimant himself is dissatisfied. Various causes of delay exist in these cases. More testimony is needed; the adjustment of the boundaries of older grants must be waited for, as in the cases of "sobrante" grants; sometimes the advertisement of surveys of other claims must be waited for; and time is required in this office for the examination of old title papers in the various cases of coterminous ranchos.

Third. Surveys which have been once sent up to the General Land Office, and returned for review and examination and cross-examination of witnesses, filing of more written testimony, or some corrections of survey, or a readvertisement, with its three months' delay. Delays in these cases are inevitable, especially if the cases are complicated, as they usually are.

Fourth. What is known in this office as the "Sepulveda decision" (Wallace's Supreme Court Reports, vol. 1, p. 104) has created another class of cases which comprises many enumerated in the three preceding classes. The decision in effect declared that surveys which had been approved by the Surveyor General previous to the act of 14th June, 1860, were not subject to the jurisdiction of the district court, and they were still under the control of the surveyor general's office and the Department of the Interior, in accordance with previous laws. This practically rendered null the notice which had been published under the law of 1860, and made it necessary that all such surveys not patented should be readvertised under the act of 1st July, 1864.

Some of these cases had already been sent up to the Commissioner, but were still subject to the rule, and others were sleeping in this office, and were supposed to have "become final." The republication has opened them up for new objections, propositions to float, or to enlarge areas and unsettle boundaries, and has caused much ill blood between coterminous proprietors and settlers. In some cases no objections have been made, and the old surveys, after republication, have gone up for patent. The number of cases affected by this decision is about An opinion seems to prevail that the eighth section of the act of 23d July, 1866, whereby all unsurveyed Mexican ranches were to be forced to a survey within ten months after the passage of the law, or after final confirmation, was to cure and close up nearly all the uncertainties of these land cases.

There were really very few ranches subject to its provisions, compared with the great number that were not. There is now scarcely a case left in which it is necessary to call in the aid of that section. That section applies only to those cases in which the claimant has not applied for a survey. But there are many more cases, in which the claimant has applied for the survey; it has been made; but for some reason, it is not acceptable to this office, or to the Department, or to the court, and it is ordered to be changed. The claimant knows it will curtail his area, or place it where he does not want it, and he either refuses to make the necessary deposit for a resurvey, or, having the matter in the courts, he keeps it there by adroit practice. Some legislation is needed to force such parties to a survey, and make the cost of it a lien upon the property.

Again, there are cases where ranches of great extent are not yet confirmed, or are actually rejected, with small probability of final confirmation.

The claimant, himself, perhaps does not much expect a confirmation; but he prefers to have the use of the property, and keep a land office, and sell quit-claim deeds to those who will buy as long as he can. He is allowed five years for appeal to the Supreme Court, and, with a sharp attorney, he can have the case continued, from time to time, for several years. Such cases require some sort of legislative physic. The remedy is entirely beyond the control of this office.

I have heard of another case, but its name was not mentioned to me, in which the

simple payment of the fees of court, or the making of some motion, or the filing of a mandate, would complete the proceedings and leave the final decree of confirmation to be filed in this office for survey. But the attorney of the claimant prefers to leave the matter at its present status.

Statement of private land claims, under Mexican title, presented to land commission, under act of March 3, 1851, (made up to the date of 16th August, 1870.)

I. Eight hundred and thirteen cases recorded in the archives of the land commission. See Hoffman's Reports, Appendix to first volume.

II. One hundred and sixty-seven of the cases are supposed to be rejected, judging from the notes in Hoffman's Appendix, and from other data.

III. Two hundred and seventy-six patented, (up to 16th August, 1870.)

IV. One hundred and nine have not arrived at the status of an official survey, that is, the decree of final confirmation, which justifies a survey, has not yet been filed in the Surveyor General's Office. This does not include those supposed to be finally rejected.

V. One hundred and thirteen not yet patented, but surveyed and papers sent to the General Land Office.

VI. One hundred and forty-eight not yet patented, but surveyed and papers not yet sent to General Land Office. About one-half of these are probably in the courts, on questions of survey. The other half in the surveyor general's office, in various stages, preparatory to being sent up. Some of them have been returned from Washington for review or correction. Others are complicated and delayed by the litigation of questions similar to those at issue before the courts.

The numbers of each class are only approximately correct. Some further examination must be made of the records of the district court, and of the files in this office, before a strictly accurate list can be made. The relative numbers of all the classes are changing weekly.

BOUNDARY LINES OF CALIFORNIA.

A copy of the elegant topographical map and elaborate computations and field-notes of the survey of the northern boundary of this State, by Daniel G. Major, United States astronomer, has been received at this office from the honorable Commissioner of the General Land Office. A previous survey of the eastern boundary of this State had been made in 1863, under the supervision of the State surveyor general, Houghton, and Butler Ives, esq., a commissioner on the part of the State of Nevada. I do not find that Mr. Major has established any connection with the monument of Houghton and Ives's survey at or near the northeastern corner of this State, nor with any of the corners of the public land surveys near Camp Bidwell. He has, however, noted the position of the flag-staff at that camp, and the deputy surveyor, Dyer, has also noted the position of the same flag-staff in his field-notes of the public land surveys of that township. He has also noted a connection with some of the measurements or line-marks of Houghton and Ives's survey of the eastern boundary on township 43 north, range 17 east. By platting these various elements, and connecting them with the natural objects noted by the surveyors, an approximate, but probably not very accurate, connection is established. The plat thus constructed (of which a copy is herewith transmitted) develops a considerable discrepancy in longitude between the monuments fixed by the two different surveyors for the northeastern corner of the State. In letting a contract for subdivision surveys adjoining the northern boundary, I shall issue special instructions to have the precise relative positions determined of the monuments at the northeast corner, as well as those along Mr. Major's surveyed line.

Should the supposed discrepancy be fully tested and proved to exist, it will awaken the inquiry whether the matter is not of sufficient importance to demand a determination by competent officers of the Government, and, with the aid of the telegraph, of the point of intersection of the 120th degree of longitude with the line of the Central Pacific Railroad, and such a correction of the eastern boundary of this State as that determination might show to be necessary.

At the western end of Mr. Major's line he passed through a township which had been subdivided adjoining the sea-coast, but he has not noted any connection with any of the corners of the public land survey, nor with any monuments or signal stations of the Coast Survey. He probably had no means of ascertaining the localities of either. The identity of some of the natural objects about the mouth of Windchuck River has enabled me to show imperfectly on a plat the connection between his survey and those of the public lands, and approximately with the topography of the Coast Survey, through a connection shown on the township plats with the light-house at Crescent City.

I am waiting for more precise information before stating the result of these connections.

This State is so large that when its public and private surveys are all platted on one map the scale is necessarily so small as to make the map of little value for exhibit-

ing or detecting any discrepancies between different surveys, or conflicts of boundaries of private land claims.

I have commenced, and shall prosecute to completion as fast as other urgent duties will permit, a series of six maps, on a scale of one and one-half inches to a township, or a quarter of an inch to the mile.

A map of this sort was made last year as a private enterprise, comprising the counties of San Diego, Los Angeles, and parts of Santa Barbara and San Bernardino, which has been found so very useful in every-day reference as to suggest the necessity of completing the entire series.

DEMAND FOR PUBLIC LANDS.

The desire to acquire title to the public lands in larger tracts than 160 acres is very prevalent, especially among the owners of large bands of sheep and cattle. In some districts, remote from large towns, men of this class have surrounded large tracts of one or two or more thousand acres with rude brush fences, or have parceled out an entire district in large tracts among themselves, with some tacit agreement to discourage the settlement of newcomers. When the United States deputy appears to subdivide these lands they do what they can to discourage or retard his surveys.

There has been some talk of applying to the legislature or to Congress to pass laws sanctioning the occupation of certain classes of lands in large bodies, for the accommodation of these herdsmen. But some difficulties lie in the way of such legislation. One is, the almost impossibility of getting a fair appraisal or classification of any lands that are to be sold in large bodies at a reduced price. The temptation will exist to include the best quality of lands in the classification.

Another, and probably an insuperable, difficulty is, that where one voter clamors for the possession of 1,600 acres of the public lands, ten other voters claim as good a right as he to 160 acres each of the same land.

It is not difficult to guess the result when the issue is fairly made.

The above remarks apply also to the question of disposing of large bodies of timber lands.

Some modification of the surveying laws or regulations seems to be called for, in view of the immense tracts of rough mountain lands in this State, throughout which are dispersed small, secluded valleys, where settlers are seeking to acquire a title, and ask for subdivision surveys of particular tracts. It will probably be a long time before the public appropriations will be applied to those tracts, except for township lines.

The rule now requires that, if a deputy goes to subdivide, he must finish up all the surveyable land in the township, or not go at all. The rule is wise, in view of the constant amendments and small formalities that would annoy this office and the General Land Office beyond endurance. But, in many of these cases, only one or two settlers are willing to pay for a survey; the others prefer no survey, being holders of larger tracts than 160 acres. The quantity of rough, unsurveyable land is unknown to the settlers or to the surveyor general, and to get a small tract surveyed a deposit must be made of nearly its entire value. Very many such applications are made to this office, and seem to carry an equity which entitles them to respect. If some mode could be devised by which this retail business of subdividing townships could be carried home to a man's neighborhood, like a justice's court, and be done by some surveyor living near by, without excessive formality and responsibility, and be audited and approved beyond appeal by some officer not over 100 miles distant, it would be a boon to the settlers, and greatly promote the rapid settlement of the country.

The agents who came from the East by railroad to seek lands for colonies generally sought for public lands at the Government price, the very fact of their inquiry having caused the owners of private lands to hold them at such prices as offered no temptation to the agents; but of surveyed lands it was difficult to find any large tracts unoccupied. All the "offered lands" of desirable quality had been either absorbed by actual purchasers, two or three years since, or had been granted to railroad companies, or were already occupied by preëmptioners.

Although there still remains a large aggregate of surveyed lands unoccupied, yet it is difficult to point out to a land on any plats of surveyed land where a *large body* of desirable land remains unoccupied. Or, to express the fact in another form, the individual settlements by preëmption have usually preceded the surveys, and taken up the desirable lands in advance.

The fact shows impressively that the annual appropriations for public land surveys in this State are greatly disproportionate to the demands for public land. And when it is remembered that the sale of the land at once reimburses the expense of the survey and much more, it would seem to be true economy to enlarge, rather than diminish, the appropriations.

The new amendment to the law of May 30, 1862, which grants to private depositors a return of their deposits for public surveys on the purchase of the land, will, to some extent, remedy the lack of appropriations. In view of the amendment just alluded to, and the fact that the annual appropriations are usually limited to \$50,000 for surveys,

I would respectfully suggest, for the consideration of the Department, the inquiry, whether the benefits of the surveying service would not be more rapidly extended if the expenditure of the public appropriation was applied solely to the surveys of meridian, standard, township, and meander lines, leaving private depositors to provide for all the subdivisional surveys. On that plan the extent of the surveys would keep pace with the demand.

RAILROADS.

All the railroad construction in this State during the past year has been in the extension of roads previously existing. I am not aware that any entirely new company has broken ground.

The Central Pacific Company has greatly enlarged its side tracks, wharves, buildings, and manufacturing and repair shops, at Sacramento. The long bridge across the American River at Sacramento having been destroyed by fire, a temporary structure was erected hastily until the more permanent one could be constructed. This latter was framed at Oakland Point. The Western Pacific has completed its connections with San José, Oakland, and Alameda, and extended the long wharf at Oakland 4,400 feet, making a total wharf of $2\frac{1}{4}$ miles in the direction of Yerba Buena Island, until ships can load and unload at the end of it in 24 feet water. One ship has already taken in a load of wheat at this point for the English market; and immense piles of lumber from the northern ports of the Pacific coast are landed there weekly, to be transported to the interior by railroad. At this point, also, the Pullman Palace cars have transferred their eastern passengers to the boat which lands them in San Francisco. The Western Pacific Company has also extended a branch from a point near the San Joaquin, up the valley toward the wheat fields of "Paradise," some 12 miles. By means of this branch a saving of \$1 50 to \$2 per ton has been effected in the transportation and shipment of the wheat of the Paradise region.

The Central Pacific Company contemplates an extension of this road up the San Joaquin Valley as far as Visalia, and probably to connect with the Southern Pacific Road.

The citizens of Stockton have also organized an independent enterprise to construct a railroad to Visalia. Some preliminary surveys have been made.

Another attempt is being made to start the actual construction of the Stockton and Copperopolis Railroad.

The Sacramento Valley Road has not yet been extended to Placerville.

The California and Oregon Road, under the control of the Central Pacific Company, has been extended across the Yuba River at Marysville, and continued on northwardly as far as Chico, and is expected to reach Red Bluffs before winter. It has made no connection with the Marysville and Oroville Road.

Official notice has been given, dated 22d August, 1870, that, in conformity with a law of this State, the Central Pacific Railroad Company, the California and Oregon Railroad Company, the San Francisco, Oakland and Alameda Railroad Company, and the San Joaquin Valley Railroad Company, have consolidated their interests under the corporate name and style of the Central Pacific Railroad Company.

The California Pacific Road has crossed the Sacramento River into the city of Sacramento, encountering there a fierce opposition and litigation from the Central Pacific Company.

It has also extended a branch from Davisville northward through Woodland, and crossing the Sacramento River at Knight's Landing, has continued through the low bottoms beyond and crossed the Feather River into Marysville. Its connection is also complete by another branch with the Napa and Calistoga Road.

Immense quantities of wheat are brought to Vallejo by the various branches of this road.

The Southern Pacific Road has been fully completed from San José 30 miles to Gilroy. The preliminary surveys have been extended over several routes toward the upper part of the San Joaquin Valley, but the actual route has not yet been selected, or, if so, it is not made public. The operations of the company have been retarded by the withdrawal of its lands, which have now been restored and the work will again go forward.

An efficient company has taken hold of the railroad project from Saucelito through Petaluma, and thence up the Russian River Valley, and through the northern coast lumber regions, and an early commencement of the work is anticipated.

The project of continuing the California Pacific Road from Marysville across the Sierra Nevada to the northern bend of the Humboldt appears to sleep for the present.

A new railroad is projected from San José to tide-water, near Alviso, intended to afford a cheaper route for agricultural products to the farmers of San José Valley.

San Diego mourns over the delays which attend the commencement of the Transcontinental Road along the southern border.

A road is projected from Wilmington in Los Angeles County through Anaheim into San Bernardino County.

The principal results thus far of the opening of railroad communication with the Eastern States have been—

First. To bring hither a large number of heavy capitalists and business men, whose main errand was not so much to establish a residence here, as to see the great natural objects of curiosity, such as the Sierras, Yosemite, the Geysers, the Pacific Ocean, and the peculiarities of our climate; and also, if possible, to discover how and where our State offered opportunities for profitable investments of capital, and the extension of business relations in new channels of enterprise. The results of their visit are to be realized rather in the future than the present, by disseminating a large amount of accurate information concerning the resources of the State, which will be made the basis of well-directed enterprises hereafter.

Second. A great number of persons have also come as the agents of bands of working-men, who desired to acquire large bodies of vacant lands for the establishment of colonies, expected to follow when the site should be selected. The final results of their visits must also be sought in the future.

Third. The Transcontinental Railroad is gradually bringing in emigrants of the farming and manufacturing classes, who come with the intention of permanent settlement.

Fourth. It has had the effect, by competition, of reducing the price of passage and freight by the Isthmus and Cape Horn routes.

Fifth. It has given an impetus to the internal railroad system of the State, encouraging the construction of branch roads, which facilitate the transportation of agricultural products. These facilities have also led to the establishment of shipping facilities at Vallejo and Oakland, by which the railroads are brought into immediate contact with large freighting ships for foreign ports. Since the opening of the present season there have been dispatched fourteen vessels for Europe, carrying complete cargoes of wheat, the aggregate being 370,298 centals. Of this amount eight vessels loaded at Vallejo, carrying 213,747 centals, and one is loading at Oakland. In this State it is expected we shall have 4,000,000 centals of wheat for export. A small lot of this has been sent east by railroad.

Sixth. It has, by rapid transit, enabled our fruit-growers to supply the State of Nevada and the Upper Mississippi Valley with the fresh fruits of California; and it has opened a way for the teas and silks of China and Japan to the Mississippi Valley.

Seventh. It is gradually changing the course of the heavy commercial exchanges of bills, bullion, and coin with the markets of China, Japan, and Australia, and has opened a new route for passengers from Europe to those countries.

Eighth. It has reduced the freight on silver, lead, and copper ore of low grade in the State of Nevada, so that they can be brought with profit to this market for smelting, or for shipping to the Eastern States, or to Europe.

A public wagon road has been nearly finished from San Diego to Fort Yuma, 180 miles, by the aid of which it is expected that goods can be transported from San Francisco to Fort Yuma for 4 cents per pound.

An appendix to this report will contain a brief summary of the more important industrial enterprises of the State.

I have the honor to be, sir, with great respect, your obedient servant,

SHERMAN DAY,

Surveyor General for California.

HON. JOSEPH S. WILSON,
Commissioner of the General Land Office.

Tables accompanying annual report of the United States surveyor general for California for the fiscal year 1869-70.

A.—Statement of contracts entered into by the United States surveyor general for California and Arizona with the deputy surveyors for surveys of public lands during the fiscal year ending June 30, 1870, and payable out of the appropriations for that fiscal year.

B.—Statement of contracts entered into by the United States surveyor general for California and Arizona with deputy surveyors for surveys of public lands during the fiscal year ending June 30, 1870, and payable out of private deposits made in conformity with section 10 of the act approved May 30, 1862.

C.—Statement of surveys of mines in California, in conformity with the law of July 20, 1866, for the fiscal year ending June 30, 1870.

D.—Statement of miles surveyed in California and Arizona to June 30, 1870.

E.—Statement of account of appropriations for the survey of public lands in California and Arizona during the fiscal year 1869-70.

F.—Statement of special deposits for the survey of public lands in California during the fiscal year 1869-70.

G.—Statement of special deposits for the survey of mining claims in California during the fiscal year 1869-'70.

H.—Account of appropriation for the salary of surveyor general of California and Arizona for the fiscal year ending June 30, 1870.

I.—Account of office rent, stationery, pay of messenger, and incidental expenses of the United States surveyor general's office for California and Arizona for the fiscal year ending June 30, 1870.

I².—Statement of account of appropriations for compensation of clerks and draughtsmen in office of United States surveyor general for California for the fiscal year ending June 30, 1870.

J.—Statement of special individual deposits for compensation of clerks and draughtsmen in office of United States surveyor general for California for the fiscal year ending June 30, 1870, deposited with the assistant treasurer of United States at San Francisco, California, as per certificates on file in this office.

K.—Statement of transcripts of field-notes sent to the Department at Washington, for the fiscal year 1869-'70.

L.—Statement of descriptive notes, decrees of court, &c., of private land claims to accompany plats for patent compiled for transmission to the Department at Washington during the fiscal year 1869-'70.

M.—Statement of plats made in the office of the United States surveyor general for California and Arizona for the fiscal year ending June 30, 1870.

N.—List of lands surveyed in California and Arizona from June 30, 1869, to June 30, 1870.

O.—Estimates for the surveying service in the district of California for the fiscal year ending June 30, 1872.

P.—Statement of deposits for survey, &c., of private land claims, during the fiscal year 1869-'70.

A.—Statement of contracts entered into by the United States surveyor general for California and Arizona with deputy surveyors, for surveys of public lands during the fiscal year ending June 30, 1870, and payable out of the public appropriations for that fiscal year.

Name of deputy.	Date of contract.	Location of work.	Meridian.	Amount of contract.	Returned amount.	Remarks.
Isaac N. Chapman	July 15, 1869	Township 9 north, ranges 9 and 10 west.	Mount Diablo.			
July 15, 1869	Township 10 north, range 10 west.	do	do	\$1, 100 00	\$664 61	
July 15, 1869	Township 18 and 19 south, range 20 east.	do	do	700 00	621 13	
July 17, 1869	Township 5 north, ranges 5 and 6 east.	do	do	1, 000 00	465 37	
July 19, 1869	Township 21 north, ranges 5, 6, and 7 east.	do	do			
July 19, 1869	Township 22 north, ranges 4, 5, and 6 east.	do	do	3, 500 00		
July 27, 1869	Townships 6, 7, 8, and 9 north, range 12 east.	do	do	3, 000 00	3, 027 43	
July 27, 1869	Townships 6, 7, 8, and 9 north, range 11 east.	do	do	3, 000 00	854 35	
Aug. 7, 1869	Township 5 south, ranges 15, 16, and 17 east.	do	do			
Aug. 7, 1869	Township 6 south, ranges 17 and 18 east.	do	do			
Aug. 7, 1869	Township 7 south, ranges 17 and 18 east.	do	do			
Aug. 7, 1869	Township 8 south, range 18 east.	do	do	5, 000 00	4, 912 81	
Aug. 10, 1869	Township 25 north, ranges 10 and 11 east.	do	do			
Aug. 10, 1869	Township 26 north, ranges 9, 10, and 11 east.	do	do			
Aug. 10, 1869	Township 27 north, range 9 east.	do	do			
Aug. 10, 1869	Townships 18 and 19 south, range 2 west.	do	do	4, 806 00		
Aug. 14, 1869	Township 1 north, ranges 13, 14, and 15 east.	San Bernardino.	San Bernardino.	600 00	646 37	Audited for \$600.
Aug. 27, 1869	Township 2 north, ranges 13, 14, and 15 east.	Mount Diablo.	Mount Diablo.			
Aug. 27, 1869	Township 4 north, ranges 9 and 10 east.	do	do	4, 000 00		
Aug. 27, 1869	Township 5 north, ranges 9 and 10 east.	do	do			
Aug. 27, 1869	Township 6 north, range 10 east.	do	do			
Aug. 27, 1869	Township 7 north, ranges 9 and 10 east.	do	do			
Aug. 27, 1869	Township 8 north, ranges 9 and 10 east.	do	do			
Aug. 27, 1869	Township 9 north, range 10 east.	do	do			
Aug. 27, 1869	Township 10 north, range 10 east.	do	do	5, 400 00		
Sept. 2, 1869	Township 12 north, ranges 34 and 35 west.	do	do			
Sept. 2, 1869	Township 27 south, ranges 10 and 11 east.	San Bernardino.	San Bernardino.			
Sept. 2, 1869	Township 28 south, ranges 10 and 18 east.	Mount Diablo.	Mount Diablo.			
Sept. 2, 1869	Township 32 south, ranges 13 and 14 east.	do	do	2, 000 00		
Sept. 4, 1869	Township 14 north, range 9 west.	do	do			
Sept. 4, 1869	Township 15 north, ranges 9 and 10 west.	do	do	10 00		
Sept. 7, 1869	Townships 13 and 14 north, ranges 13 and 14 west.	do	do	3, 500 00	3, 218 46	
Sept. 10, 1869	Township 1 south, ranges 12, 13, and 14 east.	do	do	1, 800 00	1, 700 74	
Sept. 21, 1869	Townships 6, 7, 8, and 9 north, range 12 east.	do	do	2, 250 00	1, 843 68	
Sept. 25, 1869	Township 10 north, ranges 11 and 12 east.	do	do	1, 700 00	1, 539 88	
Sept. 27, 1869	Townships 16, 17, and 18 south, range 28 east.	do	do			
Sept. 27, 1869	Townships 16, 17, and 18 south, range 27 east.	do	do			
Sept. 27, 1869	Township 16 south, ranges 25 and 26 east.	do	do	6, 000 00		
Sept. 27, 1869	Township 17 south, range 26 east.	do	do	600 00		
Sept. 30, 1869	Township 4 south, range 16 east.	do	do	1, 200 00		
Oct. 1, 1869	Townships 11 and 13 north, range 3 east.	do	do	1, 700 00		
Oct. 1, 1869	Township 5 south, ranges 8 and 9 east.	Gila and Salt Rivers, Arizona.	Gila and Salt Rivers, Arizona.			

George W. Schell	Oct. 23, 1869	Township 1 north, ranges 11 and 12 east	Mount Diablo .....	.....	.....	.....
Oct. 23, 1869	Township 2 north, ranges 10, 11, and 12 east	do	do	5,000 00	.....	1,455 33
Oct. 23, 1869	Township 3 north, ranges 9, 10, and 11 east	do	do .....	.....	.....	.....
Oct. 26, 1869	Township 31 north, ranges 12 and 13 east	do	do	3,500 00	.....	611 74
Oct. 26, 1869	Townships 32 and 33 north, range 12 east	do	do	1,800 00	.....	643 25
Oct. 30, 1869	Township 15 north, range 5 west	do	do .....	.....	.....	.....
Oct. 23, 1869	Townships 24 north, ranges 4 and 5 east	do	do	800 00	.....	.....
Nov. 2, 1869	Township 21 north, range 17 west	do	do .....	.....	.....	.....
Nov. 2, 1869	Township 4 north, range 11 east	do	do	2,500 00	.....	.....
Nov. 2, 1869	Township 5 north, range 12 east	do	do	450 00	.....	446 42
Dec. 2, 1869	Township 22 north, range 1 west	do	do .....	.....	.....	.....
Dec. 4, 1869	Township 32 north, range 6 west	do	do	836 00	.....	765 25
Dec. 4, 1869	Townships 27 and 33 north, range 5 west	do	do	700 00	.....	.....
Dec. 31, 1869	Township 17 south, range 2 east	San Bernardino	San Bernardino .....	.....	.....	.....
Jan. 21, 1870	Townships 17 and 18 north, range 3 east	Mount Diablo	Mount Diablo	1,200 00	.....	.....
Jan. 21, 1870	Townships 20, 21, and 22 north, range 2 west	do	do	2,000 00	.....	.....
Jan. 21, 1870	Township 19 north, range 1 west	do	do	215 00	.....	.....
Mar. 2, 1870	Townships 11 and 12 north, range 34 west	San Bernardino	San Bernardino .....	.....	.....	.....
Apr. 22, 1870	Township 29 south, range 12 east	Mount Diablo	Mount Diablo	450 00	.....	.....
Apr. 22, 1870	Township 30 south, ranges 13 and 14 east	do	do .....	.....	.....	.....
May 3, 1870	Township 19 north, ranges 3 and 4 east	do	do	408 00	.....	.....
June 11, 1870	Township 20 north, ranges 3 and 4 east	do	do	800 00	.....	.....
June 11, 1870	Townships 9 and 10 north, range 4 east	do	do .....	.....	.....	.....
June 29, 1870	Township 9 north, ranges 5 and 6 east	do	do	120 00	.....	.....
June 29, 1870	Township 7 north, range 8 east	do	do .....	.....	.....	.....

Work abandoned. Land not
worth surveying.

SHERMAN DAY,
Surveyor General for California.

B.—Statement of contracts entered into by the United States surveyor general for California and Arizona with deputy surveyors, for surveys of public lands during the fiscal year ending June 30, 1870, and payable out of private deposits, made in conformity with section 10 of the act approved May 30, 1862.

Name of deputy.	Date of contract.	Location of work.	Meridian.	Amount of contract.	Returned amount.	Depositors.
Thomas J. Dewoody	May 27, 1869	Township 10 north, range 6 west	Mount Diablo	\$213 00	\$196 47	J. P. Brandt, agent.
A. Leon Cervantez	July 8, 1869	Townships 30 and 31 south, range 15 east	do	403 00	248 53	A. Leon Cervantez.
Charles T. Healy	July 14, 1869	Township 29 south, range 10 east	do	350 00	100 20	J. S. Fitzgerald.
William Heiser	July 20, 1869	Township 9 south, range 4 east	do	120 00	194 74	John J. Perkins.
John A. Brewster	July 20, 1869	Township 17 north, range 17 east	do	220 00	44 78	Joshua Hendy.
John Prentice	Sept. 27, 1869	Townships 18 south, range 1 east	do	50 00	370 00	W. S. Manlove.
Gustave Cox	Sept. 27, 1869	Township 8 north, range 5 west	do	440 00	75 14	Charles Haupt.
W. F. Boardman	Oct. 1, 1869	Township 8 north, range 6 east	do	100 00	752 97	B. Benedicke and others.
W. F. Ingalls	Oct. 25, 1869	Township 2 south, range 13 west	do	110 00	60 00	John Cammit.
William P. Reynolds	Nov. 13, 1869	Township 10 south, ranges 3 and 4 west	do	60 00	50 00	F. P. F. Temple.
Stephen B. Gilbert	Dec. 27, 1869	Township 1 south, ranges 12 and 13 west	San Bernardino	260 00	170 00	A. A. W. Boynton.
John C. Walker	Mar. 4, 1870	Township 6 south, range 5 east	Mount Diablo	700 00		A. C. Bradford.
George W. Smith	Mar. 21, 1870	Township 12 south, range 18 east	do	50 00		G. W. Smith.
J. M. Allen	May 3, 1870	Township 4 north, range 4 west	do	50 00		J. C. Fountain.
Alfred Barnister	May 28, 1870	Township 18 north, range 4 west	do	260 00		Julius Bandman.
George H. Thompson	June 11, 1870	Township 5 south, range 7 east	do	170 00		Clinton Gurnee, agent.
John Reed	June 23, 1870	Township 7 south, range 10 east	do	700 00		H. Miller.
	Dec. 3, 1869	Township 29 south, range 20 east	do			

SHERMAN DAY,
Surveyor General for California.

C.—Statement of surveys of mines in California, in conformity with the law of July 26, 1866, for the fiscal year ending June 30, 1870.

Date of survey.	Name of mine,	Description.	Location.	Remarks.
April 1869	Washington	Quicksilver	Napa County ..	Sent up April 1, 1870. Sent up and returned for correction. Sent up December 24, 1869. Maps made; testimony as to value wanting.
May 1869	Spring Valley...	Gold quartz.....	Butte County...	
June 1869	X L C R	Quicksilver	Lake County...	
July 1869	Venus	Gold and silver ..	Butte County...	
July 1869	Auroral Star....	Gold quartz.....	Nevada County..	
Sept. 1869	Cerro Bonito....	Quicksilver	Fresno County..	Not platted
Dec. 1869	Stanton or Allison Ranch.	Gold quartz.....	Nevada County..	Maps made; waiting some corrections.
Dec. 1869	Sebastopol	Gold quartz.....	Nevada County..	Maps made.
Jan. 1870	Empire	Gold quartz.....	Nevada County..	Sent up January 26, 1870.
April 1870	Medean	Gold quartz.....	Amador County..	Sent up July 16, 1870.

The following should have been on the list for the year ending June 30, 1869 :

Date of survey.	Name of mine.	Description.	Location.
December 1866	Morning Star	Quicksilver	Fresno County.
December 1866	Victorina	Quicksilver	Fresno County.
September 1867	Waters	Gold quartz	Tuolumne County.
August 1867	Kate Kearney	Gold quartz	Mariposa County.
May 1868	Phoenix	Quicksilver	Napa County.
December 1868	Galena	Gold quartz	Nevada County.
August 1869	Epperson	Gold quartz	Mariposa County.

SHERMAN DAY,
Surveyor General for California.

D.—Statement of number of miles surveyed in California and Arizona to June 30, 1870.

Name of surveyor.	Date of contract.	Base.	Meridian.	Standard.	Traverse.	Meander.	Township.	Section.
		<i>Miles. chs. lks.</i>	<i>Miles. chs. lks.</i>	<i>Miles. chs. lks.</i>	<i>Miles. chs. lks.</i>	<i>Miles. chs. lks.</i>	<i>Miles. chs. lks.</i>	<i>Miles. chs. lks.</i>
Miles surveyed to June 30, 1869, as per last report.....		336 60 57	707 00 44	4,370 38 27	2,755 59 34	703 25 33	23,258 48 15	88,201 97 76
S. W. Foreman.....	April 1, 1868						10 59 20	34 12 66
J. M. Ingalls.....	May 23, 1868						11 10 43	39 30 02
J. J. Underhill.....	Sept. 1, 1868					17 06 66	5 32 85	37 39 71
William P. Reynolds.....	Dec. 3, 1868					2 10 77	14 43 47	54 51 58
T. J. Dewdney.....	Jan. 26, 1869						3 76 12	23 67 07
John Reed.....	Feb. 11, 1869							11 13 94
Ralph W. Norris.....	Feb. 25, 1869	6 00 00		11 79 00			103 37 25	300 23 97
John Wallace.....	Mar. 20, 1869						10 40 79	21 32 39
William Isaac.....	April 1, 1869						46 59 55	407 71 94
William Magoe.....	April 24, 1869					20 68 22	30 05 60	142 62 52
William Magoe.....	April 28, 1869			6 00 00			1 33 00	335 39 84
Hubert C. Ward.....	May 19, 1869						3 24 40	10 40 42
T. J. Dewdney.....	May 27, 1869							
A. J. Atwell.....	July 10, 1869							
Charles T. Healy.....	July 14, 1869					34 33	5 77 05	17 04 45
Isaac N. Chapman.....	July 15, 1869						14 00 52	49 52 39
John Wallace.....	July 17, 1869					1 09 50	9 13 25	33 08 45
William Heiser.....	July 20, 1869							10 01 00
John A. Brewster.....	July 20, 1869					10 08 52	2 05 25	1 66 55
J. M. Ingalls.....	July 27, 1869			6 00 20			44 03 07	240 71 54
G. P. Ingalls.....	July 27, 1869						6 68 70	77 16 43
John Reed.....	Aug. & Sep. '69			2 63 39			5 00 00	481 07 33
James Pascoe.....	Aug. 14, 1869					11 28 32	5 46 44	40 72 84
Isaac N. Chapman.....	Sept. 7, 1869						68 21 24	239 74 15
Alfred Bannister.....	Sept. 10, 1869	24 17					10 52 92	148 32 72
Alexander McKay.....	Sept. 21, 1869					9 48 98	18 01 66	162 59 52
J. M. Ingalls.....	Sept. 23, 1869			12 12 51			15 02 20	117 57 25
John Prentice.....	Sept. 28, 1869					1 55 88	1 00 00	58 60
Gustave Cox.....	Oct. 1, 1869						12 77 84	23 42 08
J. E. Freeman.....	Oct. 22, 1869						14 75 45	46 31 58
George W. Schell.....	Oct. 23, 1869						5 01 11	139 41 37
W. F. Boardman.....	Oct. 25, 1869					2 61 44	2 21 00	51 77
W. S. Green.....	Oct. 30, 1869						13 07 30	45 37 26
W. F. Ingalls.....	Nov. 13, 1869					8 16 54	1 07 54	9 33 26
Gilbert W. Colby.....	Dec. 2, 1869					8 53 93	1 77 17	30 37 95
William Magoe.....	Dec. 4, 1869						17 02 00	56 07 45
Alfred Bannister.....	June 11, 1870						6 20 00	9 19 82
George H. Thompson.....	June 23, 1870					6 72 12	4 79 13	2 41 50
Total miles surveyed to June 30, 1870.....		343 04 74	707 00 44	4,409 33 37	2,755 59 34	897 45 24	23,773 65 47	91,707 14 27

SHERMAN DAY,
Surveyor General for California.

E.—Statement of account of appropriations for the survey of public lands in California during the fiscal year 1869-70.

Date of account.	In favor of—	Date of contract.	Amount.	Date.	On account of—	Amount.
Jan. 6, 1870	A. J. Atwell	July 10, 1869	\$621 13	July 1, 1869	By balance of appropriation of 1868.....	\$29,021 27
Feb. 4, 1870	H. C. Ward	May 19, 1869	3,182 49		By appropriation of March 3, 1869	50,000 00
Feb. 25, 1870	H. C. Ward	May 19, 1869	189 43			
Mar. 4, 1870	J. E. Freeman	Oct. 22, 1869	643 25			
April 28, 1870	William Magee	April 23, 1869	4,931 86			
Mar. 30, 1870	Isaac N. Chapman	Sept. 7, 1869	3,218 46			
April 12, 1870	James Pascoe	Aug. 4, 1869	600 00			
April 19, 1870	Gilbert W. Colby	Dec. 2, 1869	446 42			
April 20, 1870	Alfred Bannister	Sept. 10, 1869	1,760 74			
April 20, 1870	John Reed	Aug. 7, 1869	4,912 81			
April 23, 1870	William Magee	Sept. 30, 1869				
May 10, 1870	W. S. Green	Dec. 4, 1869	765 25			
June 21, 1870	Alexander McKay	Oct. 30, 1869	611 74			
June 21, 1870	G. P. Ingalls	Sept. 21, 1869	1,843 68			
July 5, 1870	John Wallace	July 27, 1869	854 35			
July 9, 1870	J. M. Ingalls	July 17, 1869	465 37			
July 26, 1870	George W. Schell	July 27, 1869	3,027 43			
July 26, 1870	Isaac N. Chapman	Oct. 23, 1869	1,455 33			
Aug. 9, 1870	J. M. Ingalls	July 15, 1869	664 61			
	Balance of appropriations applicable to contracts made previous to June 30, 1870	Sept. 25, 1869	1,539 88			
			47,287 04	July 1, 1870	By balance of appropriations applicable to contracts made previous to June 30, 1870	47,287 04
			79,021 27			79,021 27

SHERMAN DAY,
Surveyor General for California.

E1.—Statement of account of appropriations for the survey of public lands in Arizona during the fiscal year 1869-70.

Date of account.	In favor of—	Date of contract.	Amount.	Date.	On account of—	Amount.
Oct. 1, 1869	Ralph W. Norris	Feb. 25, 1869	\$4,514 39	July 1, 1869	By appropriation of March 3, 1869	\$5,000 00

SHERMAN DAY,
Surveyor General for California.

F.—Statement of special deposits for the survey of public lands in California during the fiscal year 1869-'70.

Name of deputy.	Date of deposit.	Name of depositor.	Amount of deposit.	Amount of account.	Location of work.	Remarks.
C. T. Healey.....	July 7, 1869..	John E. Fitzgerald.....	\$250 00	\$248 53	Township 9 south, range 4 east, Mount Diablo meridian.	Surveyed.
A. Leon Cervantez.....	July 7, 1869..	Leon Cervantez.....	200 00	.....	Townships 30 and 31 south, range 15 east; township 29 south, range 10 east, Mount Diablo meridian.	Surveyed.
Wm. Heeser.....	July 10, 1869..	John J. Perkins.....	120 00	100 20	Township 17 north, range 17 west, Mount Diablo meridian.	Surveyed.
John A. Brewster.....	July 16, 1869..	Joshua Hendy.....	220 00	194 74	Township 18 south, range 1 east; township 17 south, range 1 west, Mount Diablo meridian.	Surveyed.
Gustave Cox.....	Sept. 27, 1869..	Charles Haupt.....	370 00	391 01	Township 9 north, range 13 west, Mount Diablo meridian.	Surveyed.
John Prentice.....	Sept. 23, 1869..	W. S. Manlove.....	50 00	44 78	Township 8 north, range 5 east, Mount Diablo meridian.	Surveyed.
W. F. Boardman.....	Oct. 25, 1869..	B. Benedicke & others.....	100 00	75 14	Township 2 south, ranges 3 and 4 west, Mount Diablo meridian.	Surveyed.
W. F. Ingalls.....	Nov. 15, 1869..	John Cammit.....	110 00	.....	Township 10 south, range 3 west; township 10 south, range 4 west, Mount Diablo meridian.	Surveyed.
Wm. P. Reynolds.....	Jan. 8, 1870..	F. P. F. Temple.....	359 00	.....	Township 1 north, range 12 west; township 1 south, ranges 12 and 13 west, Mount Diablo meridian.	Surveyed.
	Jan. 14, 1870..	Western Pacific Railroad Company.	2, 126 68	.....		For lands listed to the company.
	Feb. 3, 1870..	Western Pacific Railroad Company.	1, 963 52	.....		For lands listed to the company.
Step. B. Gilbert.....	Feb. 8, 1870..	A. A. W. Boynton.....	60 00	.....	Township 6 south, range 5 west, Mount Diablo meridian.	Surveyed.
J. C. Walker.....	Mar. 21, 1870..	A. C. Bradford.....	60 00	.....	Township 12 south, range 18 east, Mount Diablo meridian.	Surveyed.
Alfred Bannister.....	May 23, 1870..	Julius Baudman.....	260 00	.....	Township 5 south, range 7 east, Mount Diablo meridian.	Surveyed.
J. M. Allen.....	June 8, 1870..	G. C. Fountain.....	50 00	.....	Township 18 north, range 4 west, Mount Diablo meridian.	Surveyed.
G. H. Thompson.....	June 24, 1870..	Clinton Gurnee.....	170 00	.....	Township 7 south, range 10 east, Mount Diablo meridian.	Surveyed.

SHERMAN DAY,
Surveyor General for California.

G.—Statement of special deposits for the survey of mining claims in California during the fiscal year 1869-'70.

Name of deputy.	Date of contract.	Name of depositor.	Amount of deposit.				Location of work.
			Surveys.	Salaries.	Adv'g.	Total.	
Denton B. Brown	July 23, 1869 ..	Venus Gold and Silver Mining Company.	\$45 00	\$65 00	\$25 00	\$135 00	Venus Gold and Silver Mining Company.
S. W. Smith	Aug. 10, 1869 ..	B. Flint	20 00	20 00	25 00	65 00	Cerro Bonito mine.
James G. Mather	Sept. 7, 1869 ..	William Neeley Johnson	45 00	65 00	20 00	130 00	Stanton or Allison ranch.
James G. Mather	Sept. 7, 1869 ..	William Watt	45 00	65 00	25 00	135 00	Sebastopol Mining Company.
James G. Mather	Sept. 7, 1869 ..	Robert Watt	45 00	65 00	25 00	135 00	Galena Mining Company.
James G. Mather	Nov. 1, 1869 ..	A. H. Dorr	45 00	65 00	25 00	135 00	Santa Maria mine.
James G. Mather	Jan. 17, 1870 ..	T. W. Colburn, secretary	50 00	60 00	40 00	150 00	Empire Mining Company.
A. B. Beauvais	Mar. 1, 1870 ..	Franc Maxson	50 00	60 00	20 00	130 00	Meadeon mine.
R. M. Wilson	Mar. 10, 1870 ..	A. B. Preston	50 00	60 00	20 00	130 00	McCaun claim.
R. M. Wilson	Mar. 10, 1870 ..	A. B. Preston	50 00	60 00	20 00	130 00	Relief lode.
R. M. Wilson	May 6, 1870 ..	Arnold A. Rand	60 00	60 00	20 00	140 00	Relief lode.

SHERMAN DAY,
Surveyor General for California.

H.—*Account of appropriation for the salary of surveyor general of California and Arizona for the fiscal year ending June 30, 1870.*

Dr.				Cr.	
1869. Sept. 30	To account of S. Day for first quarter	\$750 00	1869. March 3	By appropriation for salary of surveyor general for California and Arizona.	\$3,000 00
Dec. 31	To account of S. Day for second quarter	750 00			
1870. March 31	To account of S. Day for third quarter	750 00			
June 30	To account of S. Day for fourth quarter	750 00			
		3,000 00			3,000 00

SHERMAN DAY,
Surveyor General for California.

I¹.—*Account of office rent, stationery, pay of messenger, and incidental expenses of the United States surveyor general's office for California and Arizona for the fiscal year ending June 30, 1870.*

Dr.				Cr.	
1869. Sept. 30	To amount paid in July, August, and September, first quarter.	\$887 55	1869. June 30	By balance from last year. . . By appropriation by act of March 3, 1869, for the fiscal year ending June 30, 1869.	\$2,091 33 4,000 00
Dec. 31	To amount paid in October, November, and December, second quarter.	1,254 93			
1870. March 31	To amount paid in January, February, and March, third quarter.	1,487 37			
June 30	To amount paid in April, May, and June, fourth quarter.	1,185 36			
	To balance on hand carried to next fiscal year.	1,276 12			
		6,091 33			6,091 33
			1870. June 30	By balance brought forward.	1,276 12

SHERMAN DAY,
Surveyor General for California.

I³.—Statement of account of appropriations for compensation of clerks and draughtsmen in office of United States surveyor general for California, for the fiscal year ending June 30, 1870.

DR.			CR.	
Sept. 30, 1869	To amount paid clerks and draughtsmen— For first quarter, ending September 30, 1869.	\$1,303 33	By appropriations as advised by letters from Commissioner General Land Office of date May 15, 1869.	\$4,500 00
Dec. 31, 1869	For second quarter, ending December 31, 1869.	1,084 24	By appropriations as advised by letters from Commissioner General Land Office of date June 3, 1870.	4,000 00
Mar. 31, 1870	For third quarter, ending March 31, 1870.	1,999 44		
June 30, 1870	For fourth quarter, ending June 30, 1870.	3,374 98		
	Total	7,761 99	Total	8,500 00
			By appropriation of July 12, 1870, for fiscal year 1870-71, as advised by letter of Commissioner General Land Office of date August 3, 1870; in which the foregoing account is reported balanced on books of General Land Office and Treasury Department.	11,000 00

SHERMAN DAY,
Surveyor General for California.

J.—Statement of special individual deposits for compensation of clerks and draughtsmen in office of United States surveyor general for California for the fiscal year ending June 30, 1870, deposited with assistant treasurer of the United States at San Francisco, California, as per certificates on file in this office.

Dr.		Cr.
1870. June 30	To deposit of E. O. F. Hastings, on township 4 north, range 12 west, San Bernardino meridian, withdrawn, because no survey was made under his application.....	
\$100 00		
1869. Mar. 2	By deposits of W. B. Bowen, Pittsburg Mining Company— Deposit of .. \$65 00. See Exhibit G, Annual Report, 1869. Statement .. 40 00. See Exhibit I, Annual Report, 1869.	\$25 00
April 2	Balance... 25 00	
April 2	F. San Jugo, townships 18 and 19, south, range 6 east, Mount Diablo meridian	200 00
April 2	Dr. E. F. Bailey, township 17 south, range 6 east, Mount Diablo meridian	100 00
April 2	Christy & Wise, township 25 south, range 9 west, Mount Diablo meridian	100 00
April 20	D. B. Hurlburt, township 10 north, ranges 1 and 2 west, Mount Diablo meridian	130 00
May 19	E. O. F. Hastings, township 4 north, range 12 west, San Bernardino meridian	100 00
July 7	(For these last five deposits, see Exhibit I, Annual Report, 1869.) John S. Fitzgerald, township 9 south, range 4 east, Mount Diablo meridian	100 00
July 7	A. Leon Corvantez, township 29 south, range 10 east, Mount Diablo meridian; townships 30 and 31 south, range 15 east, Mount Diablo meridian	200 00
July 10	John J. Perkins, township 17 north, range 17 west, Mount Diablo meridian	70 00
July 16	Joshua Hendy, township 17 south, range 1 west, Mount Diablo meridian; township 18 south, range 1 east, Mount Diablo meridian	180 00
July 23	Venus Gold and Silver Mining Company, Venus mine	65 00
Aug. 10	B. Flint, Cerro Bonito mine	20 00
Sept. 7	Wm. Neely Johnson, Stanton, or Allison Ranch mine.	65 00
Sept. 7	Robert Watt, Galena mine	65 00
Sept. 7	Robert Watt, Sebastopol mine	65 00
Sept. 27	Charles Haupt, township 9 north, range 13 west, Mount Diablo meridian	70 00
Oct. 25	B. Deudiet <i>et al.</i> , island in San Francisco Bay	100 00
Nov. 1	A. H. Dorr, Santa Maria mine	65 00
Nov. 15	John Cammet, township 10 south, ranges 3 and 4 west, Mount Diablo meridian	150 00
1870. Jan. 14	Charles McLaughlin, agent for the Western Pacific Railroad Company, lists of reserved railroad lands	668 38
Jan. 17	Empire Mining Company, Empire mine	60 00
Feb. 3	Charles McLaughlin, agent for the Western Pacific Railroad Company, lists of reserved railroad lands	654 51
Feb. 8	A. A. W. Bynton, township 6 south, range 5 west, Mount Diablo meridian	60 00

Mar. 1	Frank Maxson, Medean mine.....	60 00
Mar. 21	A. C. Bradford, township 12 south, range 18 east, Mount Diablo meridian.....	40 00
May 6	A. A. Rand, Relief Lode mine.....	60 00
May 28	G. C. Fountain, township 18 north, range 4 west, Mount Diablo meridian.....	25 00
June 8	Julius Bandman, township 5 south, range 7 east, Mount Diablo meridian.....	75 00
June 24	Clinton Gurnee, agent, township 7 south, range 10 east, Mount Diablo meridian.....	65 00
	Total previous to fiscal year 1869-'70.....	655 00
	Total within fiscal year 1869-'70.....	2,982 89
	Grand total June 30, 1870.....	3,637 89
	By letter from Commissioner of the General Land Office and accompanying statement, for the instruction of this office, dated August 3, 1870: "Settlement of debtor and creditor of above account has been made in the Treasury Department, leaving a balance this day, July 28, 1870, of \$1,824 23 out of the total of \$3,578 92 to the credit of that fund on the 1st of June last;" which will be noted in accounts for fiscal year 1870-'71.	
June 30	Total.....	100 00

SHERMAN DAY,
Surveyor General for California.

K.—Statement of transcripts of field-notes of public surveys sent to the Department at Washington from the surveyor general's office for California during the fiscal year 1869-70.

Name of deputy.	When sent.	Location of work.	Meridian.	Remarks.
S. W. Foreman.....	July 13, 1869.....	Township 23 south, range 10 east.....	Mount Diablo.....	Extérieurs and subdivisions.
George Hansen.....	Aug. 7, 1869.....	Township 2 south, ranges 13 and 14 west.....	San Bernardino.....	Subdivision.
John Reed.....	Aug. 7, 1869.....	Township 3 south, ranges 13 and 14 west.....	do.....	Subdivision.
Nicholas Gray.....	Sept. 11, 1869.....	Township 8 south, range 3 west.....	Mount Diablo.....	Subdivision.
Thomas S. Towle.....	Oct. 6, 1869.....	Township 18 north, range 1 west.....	do.....	Extérieurs and subdivisions.
R. R. Harris.....	Oct. 29, 1869.....	Townships 16 and 17 north, range 15 west.....	do.....	Extérieurs and subdivisions.
John Reed.....	Oct. 29, 1869.....	Township 29 south, ranges 12 and 13 east.....	do.....	Extérieurs and subdivisions.
John M. Ingalls.....	Dec. 3, 1869.....	Township 30 south, ranges 13 and 14 east.....	do.....	Extérieurs and subdivisions.
T. J. Dewoody.....	Dec. 3, 1869.....	Township 30 south, range 21 east.....	do.....	Extérieurs and subdivisions.
A. J. Atwell.....	Dec. 9, 1869.....	Township 18 north, range 13 west.....	do.....	Extérieurs and subdivisions.
William Magee.....	Dec. 9, 1869.....	Township 8 north, range 6 west.....	do.....	Subdivisions.
John Wallace.....	Jan. 6, 1870.....	Townships 18 and 19 south, range 20 east.....	do.....	Extérieurs and subdivisions.
S. W. Foreman.....	Jan. 20, 1870.....	Township 22 north, range 3 west.....	do.....	Extérieurs and subdivisions.
William Heeser.....	Jan. 20, 1870.....	Townships 27 and 28 north, range 4 west.....	do.....	Extérieurs and subdivisions.
Charles T. Healy.....	Jan. 20, 1870.....	Township 29 north, ranges 3 and 4 west.....	do.....	Extérieurs and subdivisions.
Hubert C. Ward.....	Jan. 20, 1870.....	Township 30 north, ranges 2 and 3 west.....	do.....	Extérieurs and subdivisions.
Gustavus Cox.....	Jan. 20, 1870.....	Township 31 north, ranges 4 and 5 west.....	do.....	Extérieurs and subdivisions.
William P. Reynolds.....	Jan. 20, 1870.....	Township 31 north, range 5 west.....	do.....	Extérieurs and subdivisions.
James E. Freeman.....	Jan. 20, 1870.....	Township 32 north, range 1 east.....	do.....	Extérieurs and subdivisions.
John Prentice.....	Jan. 20, 1870.....	Township 32 north, range 5 west.....	do.....	Extérieurs and subdivisions.
J. J. Underhill.....	Jan. 20, 1870.....	Township 33 north, ranges 4 and 5 west.....	do.....	Extérieurs and subdivisions.
William Isaac.....	Jan. 20, 1870.....	Township 33 north, range 8 east.....	do.....	Extérieurs and subdivisions.
T. J. Dewoody.....	Jan. 20, 1870.....	Township 5 south, range 8 east.....	do.....	Extérieurs and subdivisions.
J. M. Ingalls.....	Jan. 24, 1870.....	Township 29 south, range 6 east.....	do.....	Extérieurs, subdivisions, and meanders.
John Wallace.....	Jan. 24, 1870.....	Township 29 south, range 11 east.....	do.....	Extérieurs, subdivisions, and meanders.
S. W. Foreman.....	Jan. 24, 1870.....	Township 17 north, range 17 west.....	do.....	Subdivisions and resurvey of ranch boundary.
William Heeser.....	Jan. 31, 1870.....	Township 9 south, range 4 east.....	do.....	Extérieurs, subdivisions, and resurvey of ranch boundary.
Charles T. Healy.....	Jan. 31, 1870.....	Township 23 south, ranges 12 and 13 east.....	do.....	Subdivisions.
Hubert C. Ward.....	Feb. 5, 1870.....	Township 25 south, ranges 12 and 13 east.....	do.....	Subdivisions.
Gustavus Cox.....	Feb. 5, 1870.....	Township 26 south, ranges 12 and 13 east.....	do.....	Subdivisions.
William P. Reynolds.....	Feb. 9, 1870.....	Township 9 north, range 13 west.....	do.....	Extérieurs and subdivisions.
James E. Freeman.....	Mar. 4, 1870.....	Township 1 north, range 12 west.....	San Bernardino.....	Extérieurs and subdivisions.
John Prentice.....	Mar. 4, 1870.....	Township 1 south, ranges 12 and 13 west.....	do.....	Extérieurs, subdivisions, and meanders.
J. J. Underhill.....	Mar. 4, 1870.....	Township 24 north, range 4 east.....	Mount Diablo.....	Extérieurs and subdivisions.
William Isaac.....	Mar. 5, 1870.....	Township 8 north, range 5 east.....	do.....	Amendments in sections 1 and 12, extérieurs, subdivisions, and meanders.
T. J. Dewoody.....	Mar. 7, 1870.....	Township 10 north, ranges 1 and 2 west.....	do.....	Extérieurs and subdivisions.
J. M. Ingalls.....	Mar. 9, 1870.....	Township 17 south, range 6 east.....	do.....	Extérieurs and subdivisions, part resurveyed.
John Wallace.....	Mar. 26, 1870.....	Township 7 north, range 5 west.....	do.....	Extérieurs and subdivisions.
William Heeser.....	Mar. 26, 1870.....	Township 8 north, range 4 west.....	do.....	Extérieurs and subdivisions.
J. M. Ingalls.....	Mar. 28, 1870.....	Township 1 south, range 1 west.....	do.....	Extérieurs, subdivisions, and resurvey of ranch boundary.

I. N. Chapman	Mar. 31, 1870..	Township 13 north, ranges 13 and 14 west.....	.....do	Extérieurs and subdivisions.
R. R. Harris	Mar. 31, 1870..	Township 14 north, ranges 13 and 14 west.....	.....do	Extérieurs and subdivisions.
Gilbert W. Colby	April 4, 1870..	Township 25 south, range 9 east .....	.....do	Extérieurs and subdivisions.
William Magee	April 20, 1870..	Township 22 north, range 1 west .....	.....do	Extérieurs, subdivisions, and meanders.
Alfred Bonnistier	April 23, 1870..	Township 32 north, range 6 west.....	.....do	Extérieurs and subdivisions.
George W. Smith	April 27, 1870..	Township 33 north, range 5 west.....	.....do	Subdivisions.
W. S. Green	May 10, 1870..	Township 1 south, ranges 12, 13, and 14 east.....	.....do	Extérieurs, subdivisions, and meanders.
T. J. Dewoody	May 10, 1870..	Township 4 north, range 4 west .....	.....do	Meanders in section 35.
W. F. Boardman	May 17, 1870..	Township 45 north, range 5 west .....	.....do	Extérieurs and subdivisions.
James Pascoe	May 19, 1870..	Township 9 north, range 6 west .....	.....do	Extérieurs and subdivisions.
John Wallace	May 24, 1870..	Townships 7 and 10 north, range 6 west .....	.....do	Extérieurs, subdivisions, and meanders.
John A. Brewster	May 26, 1870..	Townships 2 south, ranges 3 and 4 west .....	.....do	Extérieurs, subdivisions, and meanders.
John Reed	June 3, 1870..	Townships 18 and 19 south, range 2 west	San Bernardino	Extérieurs, subdivisions, and meanders, and ro-tracing ranch boundary.
Alexander McKay	June 7, 1870..	Township 8 south, range 3 east	Mount Diablo.	Extérieurs and subdivisions.
George P. Ingalls	June 7, 1870..	Township 18 south, range 1 east .....	.....do	Extérieurs, subdivisions, and meanders.
R. W. Norris	June 9, 1870..	Townships 17 and 18 south, range 1 west .....	.....do	Extérieurs, subdivisions, and meanders.
	June 9, 1870..	Township 4 south, range 16 east .....	.....do	Subdivisions and extérieurs.
	June 9, 1870..	Township 5 south, ranges 15, 16, and 17 east.....	.....do	Subdivisions.
	June 9, 1870..	Township 6 south, ranges 16, 17, and 18 east.....	.....do	Subdivisions.
	June 9, 1870..	Township 7 south, ranges 17 and 18 east.....	.....do	Subdivisions.
	June 9, 1870..	Township 8 south, range 18 east .....	.....do	Subdivisions.
	June 21, 1870..	Townships 7, 8, and 9 north, range 12 east.....	.....do	Extérieurs and subdivisions.
	June 21, 1870..	Townships 6 and 7 north, range 12 east .....	.....do	Extérieurs and subdivisions.
	Oct. 5, 1869..	Township 3 south, range 9 east	Gila and Salt River, Arizona.	Extérieurs and subdivisions.
	Oct. 5, 1869..	Township 4 south, ranges 9 and 10 east .....	.....do	Extérieurs and subdivisions.
	Oct. 5, 1869..	Township 5 south, ranges 8 and 9 east.....	.....do	Extérieurs and subdivisions.

SHERMAN DAY,
Surveyor General for California.

L.—Statement of descriptive notes, decrees of court, &c., of private land claims to accompany plats for patent, compiled for transmission to the Department at Washington, during the fiscal year 1869-70.

When sent.	Nature of works.	Name of claim.	To whom confirmed.	Original.	Department.
July 2, 1869	Plat, decrees, and opinion	Rio de Santa Clara....	Valentia Cota <i>et al.</i> ...	1	1
July 8, 1869	Plat, decrees, and descriptive notes.	Ojo de Agua de Figueroa.	Heirs of Apolinario Miranda.	1	1
July 12, 1869	Plat, decrees, and opinion	San Miguelito	Miguel Abila	1	1
Sept. 3, 1869	Plat and certificate of advertisement.	Buena Vista	Jesus Machado	1	1
Oct. 19, 1869	Plat, decrees, and opinion	La Carbonera	William Boele	1	1
Oct. 28, 1869	Plat, decrees, descriptive notes, and opinion.	Pleyto	W. S. Johnson and P. K. Woodside.	1	1
Nov. 4, 1869	Plat, decrees, descriptive notes, and opinion.	Tract of land in Monterey County.	Henry Cocks.....	1	1
Nov. 20, 1869	Plat, decrees, opinion, and field-notes.	San José, and addition to San José.	Henry Dalton, I. Palomares, and R. V.ajar.	1	1
Nov. 20, 1869	Plat, decrees, opinion, and field-notes.	Azusa	Henry Dalton	1	1
Nov. 25, 1869	Plat, decrees, opinion, and field-notes.	Pueblo of San Francisco.	City of San Francisco.	1	1
Nov. 27, 1869	Plat, decrees, descriptive notes, and opinion.	San Lorenzo	Rafael Sanchez.....	1	1
Nov. 30, 1869	Certificate of advertisement....	Los Gatos, or Santa Rita.	Fermino E. de Perez ..	1	1
Dec. 4, 1869	Plat, decrees, descriptive notes, and opinion.	Potrero de San Luis Obispo.	Maria Concepcion Boronda.	1	1
Dec. 11, 1869	Plat, decrees, descriptive notes, and opinion.	Corral de Tierra	Tiburcio Vasquez.....	1	1
Dec. 15, 1869	Plat, decrees, descriptive notes, and opinion.	Corral de Tierra	H. D. McCobb.....	1	1
Dec. 24, 1869	Tracing of plat, and papers....	Pueblo of San Diego ..	President and trustees city of San Diego.	1	1
Dec. 29, 1869	Plat, decrees, descriptive notes, and opinion.	San Francisco.....	Jacoba Feles <i>et al.</i>	1	1
Jan. 3, 1870	Certificate of advertisement....	Pueblo of San Diego..	President and trustees city of San Diego.	1	1
Jan. 8, 1870	Field-notes, certificate, confirmation, and readvertisement.	San Luis Gonzaga....	Juan Perez Pacheco...	1	1
Jan. 8, 1870	Corrected plat and opinion	Santa Isabel	J. J. Ortega and Edw. Stoke.	1	1
Jan. 21, 1870	Plat, decrees, descriptive notes, and opinion.	Los Felis	Doña Maria Ignacio Budugo.	1	1
Jan. 31, 1870	Plat, decrees, descriptive notes, and opinion.	La Purisima Concepcion.	Juana Briones	1	1
Feb. 4, 1870	Certificate of advertisement....	Otay	Magdalena Estudillo..	1	1
Feb. 16, 1870	Plat, decrees, descriptive notes, and opinion.	Jesus Maria	Luis T. Burton.....	1	1
Feb. 26, 1870	Certificate of readvertisement, and opinion.	Corte Madera del Presidio.	Heirs of Juan Reid ...	1	1
Mar. 8, 1870	Opinion and testimony on rehearing.	Bolsa de San Felipe and San Joaquin.	Cruz Cervantes and F. P. Pacheco.	1	1
April 11, 1870	Plat, decrees, descriptive notes, and opinion.	San Dieguito.....	Juliana Lopez Osuna..	1	1
April 11, 1870	Plat, decrees, descriptive notes, and opinion.	Los Encenitos.....	Andres Ibarra	1	1
April 19, 1870	Plat, decrees, descriptive notes, and opinion.	Santa Gertrudes	James P. McFarland and J. G. Downey.	1	1
April 23, 1870	Certificate of readvertisement..	Jamacho	Apolinario Lorenzana.	1	1
April 23, 1870	Plat, decrees, descriptive notes, and opinion.	Los Tularcitos.....	José Higuera	1	1
April 23, 1870	Plat, decrees, descriptive notes, and opinion.	San Pedro	Francisco Sanchez ...	1	1
May 14, 1870	Plat, decrees, descriptive notes, and opinion.	Pueblo of Santa Barbara.	Mayor and common council, Santa Barbara.	1	1
May 24, 1870	Plat, decrees, descriptive notes, and opinion.	San Barnabé.....	Henry Cocks.....	1	1
May 24, 1870	Plat, decrees, field-notes, and opinion.	Lompoc.....	J. and J. A. Carillo..	1	1
May 24, 1870	Plat, decrees, field-notes, and opinion.	Mision Vieja de la Purisima.	J. and J. A. Carillo...	1	1
May 24, 1870	Plat, decrees, field-notes, and opinion.	Cañada de Salsipuedes.	John Keyes.....	1	1
June 6, 1870	Plat, decrees, descriptive notes, and opinion.	Las Positas	José Noriega <i>et al.</i>	1	1
June 6, 1870	Plat, decrees, field-notes, and opinion.	Mision la Purisima...	José Ramon Malo.....	1	1

L.—Statement of descriptive notes, decrees of court, &c.—Continued.

When sent.	Nature of works.	Name of claim.	To whom confirmed.	Original.	Department.
June 16, 1870	Plat, decrees, descriptive notes, and opinion.	Santa Aña	Crisognio Ayala	1	1
June 18, 1870	Plat, decrees, field-notes, and opinion.	San Bernardo	Mariano Soberanes	1	1
June 23, 1870	Plat, decrees, descriptive notes, and opinion.	Ojai	Fernando Tico	1	1
June 24, 1870	Plat, decrees, descriptive notes, and opinion.	Tepusquet	Antonio Maria Cota	1	1
June 30, 1870	Plat, decrees, descriptive notes, and opinion.	Huerta de Romualdo ó el Chorro.	John Wilson	1	1
June 30, 1870	Plat, decrees, descriptive notes, and opinion.	Tract of land in Mis- ion San Gabriel.	Juana Pable Jesus de Courtney.	1	1

SHERMAN DAY,
United States Surveyor General for California.

M.—Statement of plats made in the office of the United States surveyor general for California and Arizona during the fiscal year ending June 30, 1870.

Description.	Original.	Department.	Register.	Skeleton plats.	Total.
Plats of township lines	8	8	.....	.....	16
Plats of subdivision lines	132	129	176	.....	437
Plats of ranches	15	39	.....	117	171
Plats of mining claims	8	12	8	.....	28
General maps	2	2	.....	.....	4
Aggregate	165	190	184	117	656

SHERMAN DAY,
Surveyor General for California.

Township 31 north, range 1 east.	do.	a12, 663.18	10 410.80	E.	D + E	23, 073.98
Township 37 north, range 4 east.	do.	a11, 335.36	D.	E.	D + E	23, 000.16
Township 38 north, range 4 east.	do.	a11, 938.50	D.	E.	D + E	22, 471.98
Township 38 north, range 7 east.	do.	a22, 920.34				22, 930.34
Township 38 north, range 8 east.	do.	a22, 916.55				22, 916.55
Township 39 north, range 7 east.	do.	a22, 881.74				22, 881.74
Township 39 north, range 8 east.	do.	a22, 885.75				22, 885.75
Township 40 north, range 6 east.	do.	a22, 858.13				22, 858.13
Township 40 north, range 6 west.	do.	a12, 059.42	D.		A + D	22, 924.77
Township 9 north, range 13 west.	do.	a5, 569.81	9, 912.80		A + D	22, 076.99
Township 10 north, range 6 west.	do.	a11, 292.58	D.		A + D	24, 742.58
Township 17 north, range 17 west.	do.	a17, 017.42	5, 130.00			22, 137.42
Township 20 north, range 17 west.	do.	a3, 675.10	11, 906.00			15, 575.10
Township 21 north, range 13 west.	do.	a16, 973.80				23, 053.80
Township 27 north, range 4 west.	do.	a8, 000.00	15, 041.20			23, 041.20
Township 29 north, range 3 west.	do.	a11, 692.00	D.		D + river	23, 040.00
Township 30 north, range 4 west.	do.	a18, 398.94	4, 634.00			23, 032.94
Township 30 north, range 4 west.	do.	a2, 947.80		E.	A + E + F	22, 857.52
Township 30 north, range 3 west.	do.	a15, 750.63	D.		A + D + E	23, 313.72
Township 32 north, range 4 west.	do.	a19, 207.32	4, 106.40			23, 040.00
Township 32 north, range 5 west.	do.	a4, 371.60	D.		D + E	23, 040.00
Township 32 north, range 6 west.	do.	a1, 980.00	21, 760.00			23, 040.00
Township 1 south, range 6 east.	do.	a3, 923.60			A + E	23, 112.00
Township 3 south, range 7 east.	do.	a20, 005.04		E.		23, 142.24
Township 4 south, range 7 east.	do.	a19, 932.27		3, 106.96		23, 100.00
Township 4 south, range 8 east.	do.	a20, 746.64		3, 209.97		23, 177.12
Township 5 south, range 13 east.	do.	a15, 057.38		2, 413.36		23, 000.02
Township 6 south, range 16 east.	do.	a11, 553.62	D.		D + E	23, 040.00
Township 25 south, range 9 east.	do.	a9, 130.00	11, 546.40			22, 718.40
Township 28 south, range 18 east.	do.	a11, 314.93	13, 930.00			23, 040.00
Township 28 south, range 19 east.	do.	a1, 914.48	11, 403.47			23, 040.00
Township 30 south, range 13 east.	do.		21, 125.52			23, 002.52
	do.	a10, 031.26	D.		A + D	
Returned in previous reports.		517, 411.73	157, 853.48	9, 059.21	148, 313.81	844, 306.37
Aggregate brought down		1, 698, 731.04	79, 976.82	90, 207.23	359, 854.80	2, 373, 506.02
Returned in previous reports		517, 411.73	157, 853.48	9, 059.21	148, 313.81	844, 306.37
		1, 181, 319.31	77, 882.66	81, 148.02	211, 540.99	1, 529, 139.65

a Townships returned per previous reports, the areas of which are changed by subsequent surveys or amendments.

N¹.—*List of lands surveyed in California, &c.*—Continued.

RECAPITULATION.

Acres public land surveyed	1, 181, 319. 31
Acres as per column A	136, 590. 07
Acres as per column B	2, 563. 92
Acres as per column E	81, 148. 02
Acres as per column "Remarks"	211, 540. 99
	<hr/>
	1, 613, 162. 31
Deduct sum of differences in columns D and F	83, 962. 66
	<hr/>
Aggregate acres	1, 529, 199. 65
	<hr/>

SHERMAN DAY,
Surveyor General for California.

N².—*List of lands surveyed in Arizona from June 30, 1869, to June 30, 1870.*

No. of township surveys.	Description.	Public land.
		<i>Acres.</i>
1	Township 3 south, range 9 east, Gila and Salt River meridian	23, 033. 29
2	Township 4 south, range 9 east, Gila and Salt River meridian	23, 054. 64
3	Township 4 south, range 10 east, Gila and Salt River meridian	23, 046. 64
4	Township 5 south, range 9 east, Gila and Salt River meridian	23, 075. 56
5	Township 5 south, range 8 east, Gila and Salt River meridian	23, 041. 76
	Total	115, 251. 89

SHERMAN DAY,
Surveyor General for California.

O.—*Estimate for the surveying service in the district of California for the fiscal year ending June 30, 1872.*

For surveying extensions of meridians, standard parallels, township exteriors, and subdivision lines	\$70, 000
For rent of office, stationery, fuel, lights, wages of messenger, instruments, and other incidental expenses	6, 000
For compensation of surveyor general	3, 000
For compensation of clerks and draughtsmen in the office of the surveyor general	12, 000
	<hr/>
	91, 000

SHERMAN DAY,
Surveyor General for California.

P.—*Statement of deposits for survey, &c., of private land claims during the fiscal year 1869-'70.*

Name of ranch.	By whom deposited.	Amount of deposit.	Amount paid.	Balance.
Cuyamaca	J. Hartman	\$1, 000 00	\$410 00	\$590 00
Caslamayome	Barron & Co.	800 00	656 00	144 00
Laguna de la Merced	D. Mahoney	200 00	153 70	46 30
La Sierra, (Sepulveda)	Alfred Robinson ..	612 00	585 50	26 50
Cañada de San Vicente	C. H. Chamberlain ..	592 00	522 79	62 91
Huerta de Romaldo	R. Pacheco	125 00	111 53	13 47
Otay No. 2, or Janal	J. Estudillo	350 00	123 50	226 50
San Miguelito, (Abila)	W. J. Graves	300 00	256 80	43 20
Agua Caliente, or Valle de San José	A. Hayward	620 00		

SHERMAN DAY,
Surveyor General for California.

No. 17 Q.—*Report of the surveyor general for Nevada.*

UNITED STATES SURVEYOR GENERAL'S OFFICE,
Virginia, Nevada, August 10, 1870.

SIR: In compliance with your instructions, I have the honor to submit the following report, in duplicate, of the operations of this office during the fiscal year ending June 30, 1870, with accompanying statements relative to the surveying department:

A.—Statement of contracts entered into by the United States surveyor general for Nevada, with the number of miles surveyed during the fiscal year 1869-70.

B.—List of mineral claims surveyed in the State of Nevada during the fiscal year 1869-70.

C.—List of lands surveyed in the State of Nevada during the fiscal year 1869-70.

D.—Statement of plats made in the office of the United States surveyor general of Nevada for the fiscal year 1869-70.

E.—Statement of mineral surveys recopied.

F.—List of special deposits with the sub-treasury of the United States for mineral claims in Nevada during 1869-70.

G.—Statement of account of appropriation for surveys of public lands in Nevada during the fiscal year 1869-70.

H.—Statement of account of appropriation for compensation of the United States surveyor general and the employes in his office during the fiscal year 1869-70.

I.—Statement of account of appropriation for rent of office, fuel, books, stationery, and other incidental expenses, including pay of messenger, during the fiscal year 1869-70.

K.—Statement for the surveying service in the district of Nevada for the fiscal year ending June 30, 1872.

Since my last annual report the mining industry of the State has been subjected to many of the fluctuations which appear to be inseparable from that pursuit. While several mining districts have fallen, only temporarily it is hoped, into disuse, work has been revived in others which had been almost abandoned. In one of the latter, at least, (the district of Silver Bend in Nye County,) the production of silver will be considerable hereafter. Among the important discoveries may be mentioned the districts of Eureka and Secret Cañon in Lander County, Ely in Lincoln County, and Cope and Mineral Hill in Elk County. The developments of silver-bearing ore in these different districts have been pronounced to be superior. In the district of Eureka several efficient smelting works have been erected, and the product of rich lead is steadily increasing. Similar reduction works are in successful operation at White Pine, in the county of that name. At present this lead is shipped to San Francisco, New Jersey, and England, for refining. From the district of Battle Mountain in Humboldt County, near the line of the Central Pacific Railroad, the shipment of copper ore to England for reduction has been increased largely during the year.

The production of the numerous mines on the great Comstock lode will scarcely be as large as that of last year. In many of the works the ore in the opened ground has been exhausted, and most of the mines are engaged in the "dead work" of sinking and drifting for fresh bodies of ore. It is confidently believed that these explorations will keep up the product of bullion.

The Sutro tunnel, which is designed to cut the various mines on the Comstock lode at the depth of nearly 2,000 feet, has been driven in about 1,600 feet, and the project is prosecuted with vigor.

During last year a beneficent process for the treatment of silver ores, and probably gold ores, was introduced into this State by the inventor, Charles A. Stetefeldt. It is a furnace, simple and unexpensive in construction, for treating ores which require a chloridizing roasting. The finely-pulverized ore, mixed with a percentage of salt, falls 20 feet through a smooth-sided vertical shaft; each fine particle of ore and salt comes directly in contact with the products of combustion; and the fall of the ore and its desulphurizing and chloridizing occupy two seconds of time! Chloridizing by this furnace exceeds 90 per cent., and has been brought up to 96 per cent. By the old method of roasting in the Freiberg or reverberatory furnace, it was extraordinary to obtain the result of 90 per cent.; and the usual charge of 1,000 pounds of ore required to be manipulated from six to eight hours. In the Stetefeldt furnace one and a quarter tons of ore are roasted in one hour. The efficiency and economy of this new process appear wonderful. It utilizes all the salt, by which a saving of 40 per cent. of that article is effected; consumes only 50 per cent. of the fuel required in the reverberatory; reduces the loss of fine dust; and gives finer bullion. In the item of roasting the ore alone, this furnace has achieved a direct saving of \$12 per ton; and this economy will bring to the mill large lots of a low grade in silver which were hitherto worthless. Four of these furnaces have already been erected in this State; several others are in the course of construction; while others are being negotiated for. In the judgment of experienced metallurgists, the Stetefeldt furnace is destined to effect a

revolution in the business of reducing the noble ores, and to add immensely to their production.

Next to mining the most important and extensive interest in this State is the raising of stock, such as cattle, sheep, and horses. Notwithstanding the aridity of the climate and the sterile appearance of the sage-bush covered soil, large droves, flocks, and bands of these animals thrive, and literally roll in fatness. In the valleys every sage-bush shelters tufts of grass, and the hills and mountains abound in nutritious pasturage. For its area, Nevada is not surpassed by any contiguous State or Territory for its capacity in the production of meat. Its native domestic animals are healthy and vigorous, and disease is unknown among them. It is estimated that during the present year 50,000 head of cattle and 100,000 sheep, besides large bands of horses, have been driven into this State for pasturage from California, where drought has been prevalent.

In every county in the State where the soil has been cultivated crops of hay, grain, and vegetables will be generous this year. Experiments in Washoe County, in the western part of the State, have shown that alfalfa grass will thrive finely without irrigation after the first year's growth. Orchards, containing the apple, plum, pear, the hardier berries, and, in genial localities, the peach, are now seen in the older and settled portions of the State, and the experience of our farmers shows that these fruits may be cultivated to advantage after acclimation.

In the hope that this brief report will meet your approbation, I am, very respectfully, your obedient servant,

E. S. DAVIS,
Surveyor General.

Hon. JOSEPH S. WILSON,
Commissioner General Land Office, Washington, D. C.

A.—Statement of contracts entered into by the United States surveyor general for Nevada, with the number of miles surveyed during the fiscal year 1869-'70.

Contract. No.	Date.	Name of deputy.	Work embraced in contract and returned to this office.	Contract amount.	Miles surveyed.			Returned amount.	Date of transmittal.	Remarks.
					Standard.	Township.	Section.			
21..	Oct. 22, 1868	C. C. Tracy.....	Exterior or township lines of townships 32 and 33 north, range 56 east; townships 32, 33, 34, and 35 north, range 57 east; townships 33, 34, and 35 north, range 58 east; townships 34 and 35 north, range 59 east; and subdivision lines of townships 32 and 33 north, range 56 east; townships 32, 33, 34, and 35 north, range 57 east; townships 33, 34, and 35 north, range 58 east; townships 32, 33, 34, and 35 north, range 59 east; townships 33, 34, and 35 north, range 57 east; township 33 north, ranges 52, 53, and 54 east; township 36 north, ranges 57, 58, 59, and 60 east; township 37 north, ranges 59, 60, and 61 east; township 38 north, ranges 60, 61, and 62 east.	\$8,000	M. ch. lk.	M. ch. lk. 139 03 40	M. ch. lk. 638 10 57	\$7,949 81	Feb. 17, 1869 July 9, 1869 Aug. 5, 1869 Sept. 16, 1869	Am't closed; part in last report.
25..	April 24, 1869	E. B. Monroe....	Ruby Valley guide meridian, from 4th standard, between ranges 55 and 56 east, 3d standard, and 30 miles, 2d standard 30 miles; and exterior lines of township between 3d and 4th standard, from ranges 56 to 61; townships 16, 17, 18, 19, and 20 north, ranges 56, 57, 58, 59, and 60 east.	5,000	120 00 00	269 57 55	.....	5,036 63	Nov. 17, 1869	Am't closed; part in last report.
26..	May 13, 1869	R. A. Chase.....	Subdivision lines of townships 12, 13, 14, and 15 north, range 24 east; townships 12, 14, and 15 north, range 26 east; also exterior and subdivision lines of township 12 north, range 27 east.	2,500	.....	.....	244 52 38	2,446 55	Oct. 1, 1869	Am't closed; part in last report.
27..	July 14, 1869	Hatch & Eaton..	Sixth standard north, townships 30 and 31 north, ranges 35 and 36 east, through ranges 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, and 45 east; also exterior and subdivision lines of townships 29, 30, 31, and 32 north, ranges 35, 36, 37, 38, and 39 east; township 33 north, range 38 east; township 30 north, range 45 east; township 31 north, ranges 41, 43, 44, and 45 east; township 32 north, ranges 43 and 44 east.	9,500	66 00 00	201 76 70	606 72 81	9,462 60	Sept. 1, 1869 Oct. 6, 1869 Nov. 3, 1869	Amount closed.

A.—Statement of contracts entered into by the United States surveyor general for Nevada, &c.—Continued.

Contract. No.	Date.	Name of deputy.	Work embraced in contract and returned to this office.	Contract amount.	Miles surveyed.			Returned amount.	Date of transmittal.	Remarks.
					Standard.	Township.	Section.			
28..	July 25, 1869	C. C. Tracy	Exterior township lines of townships 36 and 37 north, ranges 58 and 59 east; also subdivision lines of township 32 north, range 57 east; townships 35 and 36 north, range 58 east; townships 36 and 37 north, range 59 east; townships 36 and 37 north, range 60 east.	4, 200	<i>M. ch. lk.</i>	<i>M. ch. lk.</i> 35 78 59	<i>M. ch. lk.</i> 361 04 09	4, 042 30	Nov. 9, 1869	Amount closed.
29..	Aug. 14, 1869	R. A. Chase	Subdivision lines of township 15 north, range 26 east; also exterior and subdivision lines of township 12 north, range 27 east; also exterior and subdivision lines necessary to cover the Sweetwater district.	2, 000	.....	49 60 64	138 70 57	1, 985 92	July 10, 1869	Field-notes not yet returned.
30..	Sept. 25, 1869	Hatch & Eaton ..	Fifth standard north, corner to township 26 north, ranges 46 and 47 east, through ranges 47 and 48 east; also the exterior and subdivision lines of townships 32, 33, and 34 north, ranges 47 and 48 east; townships 26, 27, and 28 north, ranges 46, 47, and 48 east; townships 21, 22, 23, 24, and 25 north, ranges 46 and 47 east.	7, 000	12 00 00	154 33 66	396 01 90	5, 993 29	Nov. 29, 1869 Dec. 9, 1869	Amount closed.
31..	Oct. 1, 1869	E. B. Monroe	Ruby Valley guide meridian, from the 2d standard north to the 6th standard line south, 204 miles; the 1st standard south from the Ruby Valley meridian to corner of ranges 70 and 71 east, 90 miles; the 2d standard south from the Ruby Valley meridian to the corner of ranges 62 and 63 east, 42 miles.	5, 040	310 00 00	.....	.....	4, 650 00	Jan. 4, 1870	Amount closed.
32..	Nov. 18, 1869	Hatch & Eaton ..	Exterior and subdivision lines of townships 25, 26, and 27 north, ranges 57 and 58 east; townships 28, 29, and 30 north, ranges 58 and 59 east; townships 31 and 32 north, ranges 59 and 60 east; township 33 north, ranges 60 and 61 east; township 34 north, range 60 east.	7, 000	29 39 00	121 47 71	488 75 39	6, 655 88	Feb. 15, 1870 Mar. 31, 1870	Amount closed.
33..	Nov. 24, 1869	O. A. Palmer	Fifth standard line north from sections 32 and 33, township 26 north, range 55 east; thence west, between townships 25 and 26 north, to the corner of township 26 north, ranges 51 and 52 east; also the 6th stand	2, 492	25 40 00	63 05 75	135 09 57	2, 490 57	Feb. 18, 1870	Amount closed.

34. Dec. 12, 1869	E. B. Monroe . . .	and north from corner of township 31 north, ranges 51 and 52 east, and run east, between townships 30 and 31 north, to corner of township 31 north, ranges 52 and 53 east; also the exterior and subdivision lines of townships 26, 27, 28, 29, 30, and 31 north, range 52 east, and township 31 north, range 51 east. Exterior lines of townships 3 and 4 south, range 59 east; townships 4, 5, and 6 south, range 60 east; townships 5, 6, and 8 south, range 61 east; also the subdivision lines of townships 7 and 8 south, range 61 east.	2, 600	.....	137 79 40	95 09 25	2, 607 07	April 21, 1870	Amount closed.
		Total.....	55, 332	553 79 00	1, 173 43 40	3, 094 66 53	53, 340 62		

B.—List of mineral claims surveyed in the State of Nevada during the fiscal year 1869 and 1870.

No. of survey.	Name of company.	Location of claim.				Area in acres.	Date of approval.	Date of transmittal.	Character of lode.
		No. of mineral district.	Mining district.	County.	Township.				
49	Gold Cañon	7	Gold Hill	Storey	Township 16 north, range 21 east.	20.00	August 9, 1869	August 23, 1869	Silver.
50	Echo	7	Gold Hill	Storey	Township 16 north, range 21 east.	6.89	August 12, 1869	September 11, 1869	Silver.
51	Enterprise	3	Gold Mountain	Nye	Unsurveyed	5.05	August 16, 1869	September 20, 1869	Silver.
57	Gould & Curry	7	Virginia	Storey	Township 17 north, range 21 east.	24.00	October 10, 1869	November 8, 1869	Silver.
62	Savannah, (resurvey)	4	Reese River	Lander	Unsurveyed	1.90	October 13, 1869	November 3, 1869	Silver.
65	MacDonald	3	Twin River	Nye	Unsurveyed	4.00	October 13, 1869	November 3, 1869	Silver.
66	William C. Lipps	4	Reese River	Lander	Unsurveyed	4.02	October 23, 1869	November 3, 1869	Silver.
35	Montgomery, (resurvey)	5	Humboldt	Humboldt	Unsurveyed	9.64	November 22, 1869	November 22, 1869	Silver.
67	Manhattan	4	Reese River	Lander	Unsurveyed	3.82	December 3, 1869	December 23, 1869	Silver.
63	Alpina, (consol)	7	Gold Hill	Storey	Township 17 north, range 21 east.	9.00	December 13, 1869	January 29, 1870	Silver.
68	New York and Austin	4	Reese River	Lander	Unsurveyed	4.60	December 23, 1869	December 23, 1869	Silver.
69	New York and Austin	4	Reese River	Lander	Unsurveyed	5.10	December 23, 1869	December 23, 1869	Silver.
70	New York and Austin	4	Reese River	Lander	Unsurveyed	5.51	December 30, 1869	December 23, 1869	Silver.
71	New York and Austin	4	Reese River	Lander	Unsurveyed	4.60	January 1, 1870	January 14, 1870	Silver.
65	Best & Belcher	7	Virginia	Storey	Township 17 north, range 21 east.	5.89	January 1, 1870	January 29, 1870	Silver.
64	William Sharon	7	Gold Hill	Storey	Township 17 north, range 21 east.	1.00	January 4, 1870	January 15, 1870	Silver.
72	Manhattan	4	Reese River	Lander	Unsurveyed	0.92	January 4, 1870	January 14, 1870	Silver.
30	Combination	3	Philadelphia	Nye	Unsurveyed	12.92	January 5, 1870	January 14, 1870	Silver.
40	Combination	3	Philadelphia	Nye	Unsurveyed	13.78	January 6, 1870	January 14, 1870	Silver.
73	O. L. C. Fairchild and T. Wren's	4	Reese River	Lander	Unsurveyed	0.32	January 9, 1870	February 13, 1870	Silver.
74	O. L. C. Fairchild and T. Wren's	4	Reese River	Lander	Unsurveyed	4.60	February 2, 1870	February 13, 1870	Silver.
75	O. L. C. Fairchild and T. Wren's	4	Reese River	Lander	Unsurveyed	6.43	February 2, 1870	February 13, 1870	Silver.
76	O. L. C. Fairchild and T. Wren's	4	Reese River	Lander	Unsurveyed	8.27	February 2, 1870	February 13, 1870	Silver.
77	T. D. John's	4	Reese River	Lander	Unsurveyed	2.80	February 8, 1870	February 13, 1870	Silver.
78	T. D. John's	4	Reese River	Lander	Unsurveyed	1.40	February 8, 1870	February 13, 1870	Silver.
79	T. D. John's	4	Reese River	Lander	Unsurveyed	2.80	February 9, 1870	February 13, 1870	Silver.
80	T. D. John's	4	Reese River	Lander	Unsurveyed	2.80	February 11, 1870	February 13, 1870	Silver.
81	New York and Austin	4	Reese River	Lander	Unsurveyed	0.03	February 11, 1870	February 13, 1870	Silver.
82	Reese River Consolidated	4	Reese River	Lander	Unsurveyed	13.90	February 18, 1870	February 21, 1870	Silver.
83	Toi-yah-be	4	Reese River	Lander	Unsurveyed	3.95	March 23, 1870	April 5, 1870	Silver.
39	George Clendon's	3	Twin River	Nye	Unsurveyed	9.90	March 25, 1870	April 5, 1870	Silver.
40	Timoke, (resurvey)	4	Reese River	Lander	Unsurveyed	0.44	March 25, 1870	March 30, 1870	Silver.
40	Philadelphia	8	Esmeralda	Esmeralda	Unsurveyed	2.06	April 30, 1870	May 5, 1870	Silver.
41	Philadelphia	8	Esmeralda	Esmeralda	Unsurveyed	20.31	April 30, 1870	May 5, 1870	Silver.
38	Rock Island	7	Gold Hill	Storey	Unsurveyed	0.04	May 3, 1870	May 18, 1870	Silver.
84	John H. Craycroft's	4	Reese River	Lander	Unsurveyed	6.43	May 3, 1870	May 5, 1870	Silver.
85	George T. Terry's	4	Reese River	Lander	Unsurveyed	2.80	May 6, 1870	May 10, 1870	Silver.
86	John A. Paxton's	4	Reese River	Lander	Unsurveyed	2.80	May 11, 1870	May 19, 1870	Silver.
37	South Aurora	4	White Pine	White Pine	Unsurveyed	5.51	May 28, 1870	June 12, 1870	Silver.
87	Jeremiah Prichard's	4	Reese River	Lander	Unsurveyed	1.30	June 29, 1870	June 29, 1870	Silver.

37	Utal	3	Mammoth	Nye	Unsurveyed	1. 61	June 3, 1870.	June 12, 1870	Silver.
66	Exchequer	7	Gold Hill	Storey	Township 17 north, range 24 east.	9. 00	June 25, 1870.	June 25, 1870.	Silver.
37	Elgin No. 7.	4	White Pine	White Pine	Unsurveyed	11. 02	June 23, 1870.	June 23, 1870.	Silver.
42	Manhattan, (resurvey)	4	Reese River	Lander	Unsurveyed	2. 90	May 12, 1870	May 13, 1870	Silver.
Total						204. 32			

C.—List of lands surveyed in the State of Nevada during the fiscal year 1869-'70.

Township	Range	Public land.	Unsurveyed.		Total.	Military reserve.	Remarks.
			Barren.	Swamp.			
		<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	
33 north..	52 east..	19,185.05	3,897.60		23,082.65		Maggie . Creek, North Humboldt Valley.
34 north..	55 east..	23,193.75			23,193.75		
32 north..	56 east..	23,076.32			23,076.32		
33 north..	56 east..	23,082.67			23,082.67		
34 north..	56 east..	8,462.18	14,505.82		22,968.00		
33 north..	58 east..	14,735.52	8,320.00		23,055.52		Walker River Val- ley.
34 north..	57 east..	20,863.46	2,253.28		23,116.74		
34 north..	58 east..	23,138.21			23,138.21		
34 north..	59 east..	9,036.65	9,445.05		22,994.01	4,512.31	
35 north..	57 east..	16,905.64	6,258.60		23,164.24		
33 north..	57 east..	23,031.74			23,031.74		
12 north..	24 east..	17,176.64	5,824.56		23,001.20		
12 north..	26 east..	23,082.54			23,082.54		
13 north..	24 east..	10,631.81	12,356.04		22,987.85		
14 north..	24 east..	2,399.50	20,675.16		23,074.66		
14 north..	26 east..	17,208.68	5,751.00		22,959.68		Humboldt Valley and vicinity.
15 north..	24 east..	4,807.56	18,296.04		23,103.60		
29 north..	35 east..	14,230.71	8,696.60		22,927.31		
30 north..	35 east..	22,918.05			22,918.05		
30 north..	45 east..	8,088.95	14,873.48		22,962.43		
30 north..	39 east..	18,528.38	4,391.94		22,920.32		
29 north..	38 east..	8,799.26	14,240.00		23,039.26		
29 north..	39 east..	7,271.52	15,682.20		22,953.72		
31 north..	35 east..	17,298.09	5,753.40		23,051.49		
31 north..	36 east..	1,756.94	21,273.16		23,030.10		
31 north..	38 east..	11,192.61	11,815.88		23,008.49		Grass Valley.
31 north..	39 east..	9,747.69	13,288.80		23,036.49		
31 north..	45 east..	15,334.04	7,840.00		23,174.04		
32 north..	35 east..	16,820.11	2,240.96		19,061.07		
32 north..	36 east..	11,892.57	11,116.40		23,008.97		
32 north..	37 east..	7,341.60	15,661.45		23,003.05		
32 north..	38 east..	22,923.45			22,923.45		
32 north..	43 east..	1,440.00	21,595.68		23,035.68		
32 north..	44 east..	7,643.60	15,300.08		22,943.68		
33 north..	38 east..	15,575.05	7,360.09		22,935.05		Cortez district.
32 north..	57 east..	9,962.70	13,128.40		23,091.10		
35 north..	58 east..	23,012.33			23,012.33	542.23	
36 north..	58 east..	23,024.34			23,024.34	4.69	
36 north..	59 east..	23,108.70			23,108.70		
36 north..	69 east..	11,362.15	11,676.96		23,039.11		
37 north..	59 east..	23,029.59			23,029.59		
37 north..	60 east..	21,609.41	1,440.00		23,049.41		
21 north..	46 east..	18,246.31	4,800.00		23,046.31		
22 north..	47 east..	17,706.93	5,280.00		22,986.93		Pine Valley.
21 north..	47 east..	5,579.04	17,430.42		23,009.46		
26 north..	48 east..	10,573.96	12,480.00		23,053.96		
27 north..	48 east..	11,500.00	11,523.60		23,023.60		
28 north..	48 east..	19,603.39	3,360.00		22,963.39		
32 north..	47 east..	4,475.20	18,545.80		23,021.00		
33 north..	47 east..	17,890.20	5,123.20		23,013.40		
33 north..	48 east..	21,700.26	1,280.00		22,980.26		
34 north..	47 east..	960.00	22,080.00		23,040.00		
34 north..	48 east..	17,393.32	5,562.72		22,956.04		Embracing Ruby Valley.
28 north..	52 east..	17,365.86	5,601.12		22,966.98		
29 north..	52 east..	12,692.38	9,598.50	640.00	22,930.88		
30 north..	52 east..	10,231.26	12,003.00	680.00	22,914.26		
31 north..	52 east..	5,920.72	17,120.60		23,041.32		
31 north..	51 east..	1,600.76	21,439.24		23,040.00		
25 north..	57 east..	14,858.22	7,330.08	784.78	22,973.08		
25 north..	58 east..	20,160.38	2,560.00	205.89	22,926.27		
26 north..	57 east..	2,412.84	15,678.56	4,946.03	23,037.43		
26 north..	58 east..	1,480.84	15,360.00	6,100.28	22,941.12		
27 north..	57 east..	320.00	22,641.76		22,961.76		Pahranagat Val- ley.
27 north..	58 east..	2,078.11	12,160.00	8,723.65	22,961.76		
28 north..	58 east..	9,824.97	5,601.76	7,536.93	22,963.66		
29 north..	58 east..	4,600.82	10,371.20	8,040.30	23,012.32		
29 north..	59 east..	175.76	10,738.00	12,027.36	22,941.12		
30 north..	58 east..	1,440.00	21,543.36		22,983.36		
30 north..	59 east..	18,452.36	1,165.53	3,313.51	22,931.40		
31 north..	59 east..	11,278.40	11,736.96		23,015.36		
31 north..	60 east..	23,049.07			23,049.07		
32 north..	59 east..	5,480.00	17,500.96		22,980.96		
32 north..	60 east..	22,994.75			22,994.75		Humboldt Valley and vicinity.
33 north..	60 east..	17,248.38	5,704.60		22,952.98		
33 north..	61 east..	1,518.72	21,460.16		22,978.88		
34 north..	60 east..	2,720.00	20,243.20		22,963.20		
7 south..	61 east..	23,028.24			23,028.24		
8 south..	61 east..	11,654.11	11,208.56	190.01	23,052.68		

C.—List of lands surveyed in the State of Nevada, &c.—Continued.

Township	Range.	Public land.	Unsurveyed.		Total.	Military reserve.	Remarks.
			Barren.	Swamp.			
		<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	
15 north..	26 east ..	3, 838. 43	18, 992. 96	.....	22, 831. 39	.....	Walker River Valley.
12 north..	27 east ..	19, 799. 73	3, 198. 00	.....	22, 997. 73	.....
7 north..	25 east ..	19, 612. 68	3, 405. 83	.....	23, 018. 51	.....
7 north..	26 east ..	8, 958. 79	14, 084. 56	.....	23, 043. 35	.....
Total..	.....	1, 073, 808. 03	750, 872. 78	53, 188. 74	1, 882, 928. 78	5, 059. 23	

D.—Statement of plats made in the office of the United States surveyor general of Nevada for the fiscal year 1869-'70.

Description.	Original.	Department.	Register.	Sketches for deputies.	Total.
Plat of meridians.....	1	1	.....	.....	2
Plat of standards.....	1	1	.....	.....	2
Plat of townships.....	12	9	.....	.....	21
Plat of townships, (subdivided)	82	82	78	.....	242
Plat of mineral claims.....	44	44	44	.....	132
Plat of mineral claims recopied.....	24	.....	.....	.....	24
Sketches for deputies.....	.....	.....	.....	8	8
Transcript plats of mineral districts.....	3	12	.....	.....	15
Plat of Nevada.....	1	1	.....	.....	2
Plat of Ruby meridian and standards for Army Department.....	.....	.....	.....	3	3
Grand total.....	.....	.....	.....	.....	451

E.—Statement of mineral surveys recopied.

No.	Name.	How often.	No.	Name.	How often.
37	El Dorado South	1	39	Brophy.....	1
37	Twin River.....	1	38	Golden Swan.....	1
40	Cosmopolitan	1	41	Kentucky	1
37	Dean.....	1	48	Confidence	1
37	Union.....	1	40	Timoke	3
39	Buckeye.....	1	43	Old Colony.....	1
37	Utah.....	1	44	Big Smoky.....	1
43	Homestead.....	1	38	North Star.....	1
41	Lady Bryan	1	37	South American.....	1
40	Bailey.....	1	46	Silver Queen.....	1
38	Ohio.....	1	45	Mettacon.....	1
38	Utah.....	1	39	Dianah.....	1

F.—List of special deposits with the sub-treasury of the United States for mineral claims in Nevada during 1869 and 1870.

Survey number.	Name.	District.	Deputy.	Amount.
49	Gold Cañon.....	7	I. E. James.....	\$60 00
50	Echo.....	7	I. E. James.....	60 00
37	Enterprise.....	3	T. J. Read.....	70 00
62	Gould and Curry.....	7	I. E. James.....	150 00
65	Savannah.....	4	T. J. Read.....	No charge.*
38	McDonald.....	3	T. J. Read.....	70 00
66	William C. Lipps.....	4	T. J. Read.....	70 00
38	Montgomery.....	5	A. J. Hatch.....	No charge.*
67	Manhattan.....	4	T. J. Read.....	70 00
63	Alpha.....	7	I. E. James.....	75 00
68	New York and Austin.....	4	T. J. Read.....	70 00
69	New York and Austin.....	4	T. J. Read.....	70 00
70	New York and Austin.....	4	T. J. Read.....	70 00
71	New York and Austin.....	4	T. J. Read.....	70 00
65	Best and Belcher.....	7	I. E. James.....	75 00
64	William Sharon.....	7	I. E. James.....	75 00
72	Manhattan.....	4	T. J. Read.....	70 00
39	Combination.....	3	T. J. Read.....	70 00
40	Combination.....	3	T. J. Read.....	70 00
73	O. L. C. Fairchild.....	4	T. J. Read.....	70 00
74	O. L. C. Fairchild.....	4	T. J. Read.....	70 00
75	O. L. C. Fairchild.....	4	T. J. Read.....	70 00
76	O. L. C. Fairchild.....	4	T. J. Read.....	70 00
77	T. D. Johns.....	4	T. J. Read.....	70 00
78	T. D. Johns.....	4	T. J. Read.....	70 00
79	T. D. Johns.....	4	T. J. Read.....	70 00
80	T. D. Johns.....	4	T. J. Read.....	70 00
81	New York and Austin.....	4	T. J. Read.....	70 00
82	Reese River Consolidated.....	4	T. J. Read.....	70 00
83	Toi-ya-be.....	4	T. J. Read.....	70 00
39	George Clendon's.....	3	T. J. Read.....	70 00
40	Timoke.....	4	T. J. Read.....	No charge.*
40	Philadelphia.....	8	R. A. Chase.....	90 00
41	Philadelphia.....	8	R. A. Chase.....	90 00
38	Rock Island.....	7	I. E. James.....	75 00
84	John A. Craycroft's.....	4	T. J. Read.....	70 00
85	George T. Terry's.....	4	T. J. Read.....	70 00
86	John A. Paxton's.....	4	T. J. Read.....	70 00
37	South Aurora.....	4	T. J. Read.....	150 00
87	Jeremiah Prichard's.....	4	T. J. Read.....	70 00
37	Ural.....	3	T. J. Read.....	70 00
66	Exchequer.....	7	I. E. James.....	75 00
37	Elgin No. 7.....	4	T. J. Read.....	
42	Manhattan.....	4	T. J. Read.....	No charge.*

*Resurvey.

G.—Statement of account of appropriation for surveys of public lands in Nevada during the fiscal year 1869-70.

Dr.			Cr.
Amount paid quarter ending September 30, 1869.	\$9,126 22		
Amount paid quarter ending December 31, 1869.	23,587 87		
Amount paid quarter ending March 31, 1870.	13,796 45		
Amount paid quarter ending June 30, 1870.	2,607 07		
	49,117 61		
By balance.....	3,544 03		
	52,661 64		
		1870.	
		July 1	
		By balance	

H.—*Statement of account of appropriation for compensation of the United States surveyor general and the employes in his office during the fiscal year 1869-70.*

DR.			CR.	
Amount paid quarter ending September 30, 1869.	\$2,325 00		By balance	\$3,465 79
Amount paid quarter ending December 31, 1869.	2,325 00		By appropriation March 3, 1869	6,500 00
Amount paid quarter ending March 31, 1870.	2,325 00		By appropriation for deficiency April 20, 1870.	236 00
Amount paid quarter ending June 30, 1870.	2,325 00			
	9,300 00			
By balance	901 79			
	10,201 79			10,201 79
		1870. July 1	By balance	901 79

I.—*Statement of account of appropriation for rent of office, fuel, books, stationery, and other incidental expenses, including pay of messenger, during the fiscal year 1869-70.*

DR.			CR.	
Amount paid quarter ending September 30, 1869.	*\$1,789 91		By balance	\$4 91
Amount paid quarter ending December 31, 1869.	208 75		By appropriation March 3, 1869	2,000 00
Amount paid quarter ending June 30, 1870.	70 11		By appropriation for deficiency April 20, 1870.	64 00
	2,068 77			
By balance	14			
	2,068 91			2,068 91
		1870. July 1	By balance	14

* The amount paid in the quarter ending September 30, 1869, includes the accounts of the quarters ending March 31 and June 30, 1869.

K.—*Statement for the surveying service in the district of Nevada for the fiscal year ending June 30, 1872.*

For surveying standard, exterior, township, and subdivision lines in the vicinity of the Central Pacific Railroad	\$20,000
For surveying standard, exterior, township, and subdivision lines in the Eureka, Cope, Mineral Hill, and Ely mining districts.....	25,000
For surveying the Mormon settlements bordering upon the eastern State line.....	10,600
For compensation of surveyor general.....	3,000
For compensation of clerks	7,800
Rent of office, stationery and incidental expenses, including salary of messenger	3,700

No. 18.—Statement of confirmed Indian pueblo grants and private land claims in New Mexico.

PUEBLO GRANTS.

Designation.	Name.	Confirinee.	Under act of—	Area in acres.
A	Jemez	Indians of the pueblo	Dec. 22, 1858, 11 Stat., p. 374.	17, 510. 45
B	Acoma	do	do	Not surveyed.
C	San Juan	do	do	17, 544. 77
D	Picuris	do	do	17, 460. 69
E	San Felipe	do	do	34, 766. 86
F	Pecos	do	do	18, 763. 33
G	Cochiti	do	do	24, 256. 50
H	Santo Domingo	do	do	74, 743. 11
I	Taos	do	do	17, 360. 55
K	Santa Clara	do	do	17, 368. 52
L	Tesuque	do	do	17, 471. 12
M	San Ildefonso	do	do	17, 292. 64
N	Pojoaque	do	do	13, 520. 38
O	Zia	do	do	17, 514. 63
P	Sandia	do	do	24, 187. 29
Q	Isleta	do	do	110, 080. 31
R	Uambe	do	do	13, 586. 33
	Laguna*	do	June 21, 1860	Not surveyed.

*Confirmed by 3d section, act of 21st June, 1860, 12 Stat., p. 71, in connection with private claim No. 30.

PRIVATE LAND CLAIMS.

Designation.	Name.	Confirnee.	Under act of—	Area in acres
1	San Juan Bautista del Ojito del Rio de las Gallinas.	Preston Beck, jr	June 21, 1860	318, 699. 72
2	Town of Tomé	Inhabitants of the town	Dec. 22, 1858	121, 594. 53
3	Tierra Amarilla	Francisco Martinez <i>et al</i>	June 21, 1860	Not surveyed.
5*	Town of Casa Colorado.	Inhabitants of the town	Dec. 22, 1858	Do.
6	Brazito	Legal representatives of Juan Antonia Garcia	June 21, 1860	Do.
7	Town of Tecolote	Inhabitants of the town	Dec. 22, 1858	21, 636. 83
8	Las Frigos	Legal representatives of Francisco Trajillo, Diego Padilla, and Bartolome Marquez.	June 21, 1860	12, 545. 66
9	Junta de las Rios	John Scolly, Guillermo Smith, Gregorio Trajillo, Augustin Duran, Santiago Giddings, and Francisco Romero.	June 21, 1860	Not surveyed.
10	Nuestra Señora de la Luz.	John Lamy, bishop of New Mexico	June 21, 1860	16, 546. 85
11	Town of Chilili	Inhabitants of the town	Dec. 22, 1858	38, 435. 14
12	Agua Negra	Antonio Sandoval.	June 21, 1860	Not surveyed.
13	Town of Belen	Inhabitants of the town	Dec. 22, 1858	194, 663. 75
14	San Pedro	José Serafin Ramirez	June 21, 1860	35, 911. 63
15	.....	Charles Beaubien and Guadalupe Miranda	June 21, 1860	Not surveyed.
16†	.....	José Leandro Perca	June 21, 1860	Do.
18	Cañon de Pecos	Legal representatives of Juan Estevan and legal representatives of Francisco Ortiz, Jr., and Juan de Aguilar.	June 21, 1860	Do.
16	Rancho of the pueblo of San Cristoval.	E. W. Eaton, assignee and legal representative of Domingo Fernandez and others.	June 21, 1860	27, 854. 06
20	Town of Las Vegas	Inhabitants of the town	June 21, 1860	496, 446. 96
†	Location No. 1	Heirs of Luis Maria Cabeza de Baca, in lieu of "Las Vegas Grandes."	June 21, 1860	Not surveyed.
†	Location No. 2	do	June 21, 1860	99, 289. 39
21	Town of Tajique	Inhabitants of the town	June 21, 1860	Not surveyed.
22	Town of Torreon	do	June 21, 1860	Do.
23	Town of Manzano	do	June 21, 1860	Do.
24	San Isidro	Legal representatives of Antonio Armenta and Salvador Sandoval.	June 21, 1860	Do.
25	Town of Cañon de San Diego.	Inhabitants of the town	June 21, 1860	Do.
27	Town of Las Trampas	do	June 21, 1860	Do.
28	.....	Legal representatives of Sebastian Martin	June 21, 1860	Do.
29	Town of Anton Chico.	Inhabitants of the town	June 21, 1860	389, 662. 72
30	Rancho of Pagnaté, rancho of El Rito, Gigante Cañon, and rancho of San Juan and Santa Ana.	Indians of the pueblo of Laguna	June 21, 1860	Not surveyed.

No. 18.—*Statement of confirmed Indian pueblo land grants, &c.*—Continued.

PRIVATE LAND CLAIMS.

Designation.	Name.	Confirinee.	Under act of—	Area in acres.
31	.....	Legal representatives of Vicente Duran y Armijo.	June 21, 1860	Do.
32	Town of Mora	Inhabitants of the town	June 21, 1860	Do.
33	Valverde and Fray Cristoval.	Heirs of Pedro Armendares.....	June 21, 1860	Do.
34	.....	do	June 21, 1860	Do.
35	Bosque del Apache....	Antonio Sandoval.....	June 21, 1860	Do.
36	Town of Chamito.....	Inhabitants of the town	June 21, 1860	Do.
37	Town of Tejon	do	June 21, 1860	Do.
38	.....	Legal representatives of Pedro Sanchez.....	June 21, 1860	Do.
43	Ortiz mine	Elisha Whittlesey, Abraham Rencher, Ferdinand W. Risque, Nathaniel M. Miller, Joseph F. Walker's representatives, Charles E. Sherman, and Andrew J. O'Bannon.	Mar. 1, 1861	69, 458. 33
70	Cañon del Agua.....	José Serafin Ramirez	June 12, 1866	3, 501. 21

*The claim of Casa Colorado is numbered 29 in the act of confirmation, but in the corrected list of private claims (see letter of surveyor general of January 12, 1858) is numbered as above.

†The claim of E. W. Eaton is numbered 16 in the act of confirmation, but should have been numbered 19. It seems to have been accidentally omitted in the corrected list.

‡The heirs of Luis Maria Cabeza de Baca, by the act of June 21, 1860, were granted, in lieu of "Las Vegas Grandes," which they claimed, the same amount of land contained in the Las Vegas town grant, to be located by them in square bodies, not exceeding five in number. The heirs of Baca have located said grant in five square bodies, viz: Nos. 1 and 2 in New Mexico, Nos. 3 and 5 in Arizona, and No. 4 in Colorado.

JOS. S. WILSON, *Commissioner*.

DEPARTMENT OF THE INTERIOR,
General Land Office, October 27, 1870.

No. 19.—*Statement showing the area of the several States and Territories containing public and the quantity of land which remained unsold and unap*

No. 1.	No. 2.		No. 3.	No. 4.	No. 5.
States and Territories containing public lands.	Areas of States and Territories containing public lands.		Quantity sold.	Entered under the homestead law of May 20, 1862, and its supplements of 1864 and 1866.	Granted for military services.
	Square miles.	Acres.	Acres.	Acres.	Acres.
Ohio	39,964.00	25,576,960.00	12,805,911.82	6,247.94	1,817,425.99
Indiana	33,809.00	21,637,760.00	16,124,044.78	120.00	1,311,956.65
Illinois	55,410.00	35,462,400.00	19,879,541.00	272.03	9,533,653.00
Missouri	65,359.00	41,824,000.00	22,963,198.02	1,525,151.06	6,810,242.89
Alabama	50,722.00	32,462,080.00	17,789,351.45	624,781.94	1,158,611.17
Mississippi	47,156.00	30,179,840.00	12,201,037.03	301,325.99	384,697.73
Louisiana	41,346.00	26,461,440.00	5,720,349.71	159,917.45	1,156,442.50
Michigan	56,451.00	36,128,640.00	12,463,610.26	1,452,325.79	3,838,546.78
Arkansas	52,198.00	33,406,720.00	8,235,726.57	864,662.57	2,258,146.92
Florida	59,268.00	37,931,520.00	1,832,431.49	364,177.55	465,262.04
Iowa	55,045.00	35,228,800.00	11,916,276.26	714,598.28	14,075,385.77
Wisconsin	53,924.00	34,511,360.00	10,176,950.55	1,096,434.25	6,263,142.82
California	188,981.00	120,947,840.00	3,371,630.41	495,682.33	493,652.00
Minnesota	83,531.00	53,459,840.00	2,426,501.78	3,168,556.99	5,859,819.00
Oregon	95,274.00	60,975,360.00	309,611.13	468,066.69	63,309.14
Kansas	81,318.00	52,043,520.00	511,433.42	1,663,775.79	4,176,345.95
Nevada	112,090.00	71,737,600.00	67,179.39	22,037.71	7,900.00
Nebraska	75,995.00	48,636,800.00	1,053,188.51	1,869,701.08	1,650,388.05
Washington Ter'y	69,994.00	44,796,160.00	362,797.14	350,818.25	46,513.63
New Mexico Ter'y	121,201.00	77,568,640.00	483.00	483.00	.....
Utah Territory	84,476.37	54,065,043.20	81,761.81	126,311.12	18,200.00
Dakota Territory	150,931.45	96,596,128.00	70,257.42	361,964.60	26,560.00
Colorado Territory	104,500.00	66,880,000.00	185,540.54	201,354.57	172,280.00
Montana Territory	143,776.00	92,016,640.00	26,214.55	41,091.07	480.00
Arizona Territory	113,916.00	72,906,240.00	.....	.....	.....
Idaho Territory	86,294.00	55,228,160.00	12,980.16	20,875.41	320.00
Wyoming Territory	97,882.92	62,645,068.80	.....	.....	.....
Indian Territory	68,991.00	44,154,240.00	.....	.....	.....
Alaska Territory	577,390.00	369,529,600.00	.....	.....	.....
Total	2,867,184.74	1,834,998,400.00	160,588,005.20	15,900,730.46	61,589,282.03

Column No. 5 shows the quantity of public land returned as actually located with military bounty-
 -tery reserve in Ohio, nor the outstanding warrants not returned as located up to June 30, 1870.

Column No. 6 shows the quantity selected within their own limits, by States containing public lands,
 under said act to non-public-land-holding States which had been located by the State assignees up to
 said act be made applicable to all the States.

Column No. 7 shows the quantity actually certified under grants for railroads, and not the whole
 ferred pursuant to the railroad grants by acts of Congress, with the grants for wagon roads, will be

Column No. 8 shows the quantity embraced in approved swamp selections up to the 30th June, 1870,
 approvals. (See swamp table No. 6.)

Column No. 9 shows the quantity granted for internal improvements under the act of September 4,
 in prior grants to each State for internal improvements. In the case of Ohio and Indiana the prior
 received no land under the act of 1841. In the case of Illinois, Iowa, and Wisconsin, the quantities
 under the acts of 1842 and 1854; the quantity granted to Iowa for the improvement of the Des Moines
 improvement of the Fox and Wisconsin Rivers, under the act of 1846, and therefore exceed the quantity

Column No. 10 shows the quantity granted for university purposes, and the estimated quantity granted
 the Indian Territory nor Alaska being included.

lands, the quantity of land disposed of, by sale or otherwise, in each up to the 30th June, 1870, propriated at that date in the several States and Territories.

No. 6.		No. 7.	No. 8.	No. 9.	No. 10.	
Granted for agricultural colleges—act of July 2, 1862.		Approved under grants in aid of railroads.	Approved swamp selections.	Quantity granted for internal improvements.	Donations and grants for schools and universities.	
Selected in place.	Located with scrip.				Schools.	Universities.
Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
			25,640.71	1,243,001.77	704,488	69,120
			1,263,733.28	1,609,861.61	650,317	46,080
		2,595,053.00	1,489,120.01	533,382.73	985,066	46,080
244,384.51	304,499.55	1,715,435.00	4,331,936.26	500,000.00	1,199,139	46,080
		2,288,132.50	400,434.78	500,000.00	902,774	46,080
		908,680.29	3,068,642.31	500,000.00	837,584	46,080
		1,072,405.45	8,430,254.73	500,000.00	786,044	46,080
225,253.88	992,632.38	2,909,103.62	5,691,878.66	500,000.00	1,067,397	46,080
		1,793,167.10	7,287,060.51	500,000.00	886,460	46,080
		1,760,468.39	10,901,007.76	500,000.00	908,503	92,160
240,000.96	205,820.82	3,360,825.27	867,625.04	1,333,079.90	905,144	46,080
240,007.73	1,111,385.07	1,642,973.74	3,029,738.55	1,183,728.42	958,649	92,160
	776,437.31	541,850.23	793,401.04	500,000.00	6,719,324	46,080
119,852.17	731,631.43	2,626,984.64	769,371.15	500,000.00	2,969,990	46,080
	18,684.10			500,000.00	3,329,706	46,080
90,000.40	609,467.69	2,908.92		500,000.00	2,891,306	46,080
				500,000.00	3,985,428	46,080
11,504.96	990,396.03			500,000.00	2,702,044	46,080
	12,471.66				2,488,675	46,080
					4,309,368	46,080
					3,003,613	46,080
	160.00				5,366,451	
	27,398.33				3,715,555	
					5,112,035	
					4,050,350	
					3,068,231	
					3,480,281	
1,171,004.61	5,680,984.37	23,217,994.15	48,349,844.79	12,403,054.43	67,983,922	1,082,880

land warrants, and does not include the military scrip received as money, the area of the Virginia mili-

under the agricultural college act of July 2, 1862, and its supplements; also the quantity of scrip issued June 30, 1870, and not the quantity liable to pass under the act, which would be 9,510,000 acres, should

quantity which will inure under the grants, it being estimated that the aggregate which will be trans- equal to 198,165,794.67 acres. (See table No. 11.)

under the acts of 1849, 1850, and 1860, and not the quantity selected, the latter being in excess of the

1841, and specific grants prior thereto. The act of 1841 granted 500,000 acres, less the quantity embraced grants covered the quantity given in column 9, exceeding 500,000 acres, and therefore those States given in this column include the additional selections by Illinois for the Illinois and Michigan Canal, River, under the acts of 1846 and 1862, and joint resolution of 1861; also the grant to Wisconsin for the of 500,000 acres.

to the States and reserved in the organized Territories, respectively, for the support of schools, neither

No. 19.—Statement showing the area of the several States

No. 1.	No. 11.	No. 12.	No. 13.	No. 14.	No. 15.
States and Territories containing public land.	Located with Indian scrip.	Located with float scrip, under act March 17, 1862.	Estimated quantity granted for wagon roads.	Quantity granted for ship canal.	Salines.
	Acres.	Acres.	Acres.	Acres.	Acres.
Ohio					24, 216
Indiana					23, 040
Illinois					121, 629
Missouri		80. 00			46, 080
Alabama	7, 918. 83				23, 040
Mississippi	16, 402. 00				
Louisiana	78, 563. 24				
Michigan	400. 00	12 896. 24	1, 718, 613	1, 250, 000	46, 080
Arkansas	275, 972. 64				46, 080
Florida					
Iowa	2, 200. 00	80. 00		200, 000	46, 080
Wisconsin	22, 891. 21	1, 680. 00	250, 000		
California	37, 585. 19	80. 00			
Minnesota	244, 672. 29	400. 00			46, 080
Oregon			1, 813, 600		46, 080
Kansas	640. 00				46, 080
Nevada	15, 156. 99				
Nebraska	1, 760. 00	80. 00			
Washington Ter'y					
New Mexico Ter'y					
Utah Territory	79. 82				
Dakota Territory	10, 210. 00				
Colorado Territory	1, 200. 00				
Montana Territory					
Arizona Territory					
Idaho Territory					
Wyoming Territory					
Indian Territory					
Alaska Territory					
Total	715, 652. 21	15, 296. 24	3, 782, 213	1, 450, 000	514, 485

Column No. 12 shows the quantity located with scrip issued under the act of March 17, 1862, (12 Stat., La Nana grants, in Louisiana.

Column No. 15, showing the quantity granted for salines, does not include the selections by the State

Column No. 21 shows the quantity embraced in confirmed private claims, so far as returns of surveys

DEPARTMENT OF THE INTERIOR, *General Land Office, October 27, 1870.*

* Donations to actual settlers under the act of September 27, 1850, and supplemental acts.

and Territories containing public lands, &c.—Continued.

No. 16.	No. 17.	No. 18.	No. 19.	No. 20.	No. 21.	No. 22.
Seats of government and public buildings.	Granted to individuals and companies.	Granted for deaf and dumb asylums.	Reserved for benefit of Indians.	Reserved for companies, individuals, and corporations.	Confirmed private land claims.	Remaining unsold and unappropriated June 30, 1870.
Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
	32, 141. 24		16, 330. 73	8, 805, 976. 00	26, 459. 80	
2, 560	843. 44		126, 220. 71	149, 102. 00	329, 880. 53	
2, 560	954. 64		41, 754. 59		233, 334. 00	
2, 560			22, 587. 61		1, 477, 993. 77	734, 632. 33
1, 620	1, 981. 53	21, 949. 46	2, 542, 378. 82		213, 386. 65	5, 939, 632. 87
1, 280	15, 965. 31		16, 561, 608. 82		688, 083. 25	4, 648, 453. 27
	8, 412. 98				2, 075, 426. 29	6, 437, 543. 65
13, 200	4, 080. 00		109, 300. 83		126, 711. 25	3, 660, 530. 31
10, 600	139, 366. 25	2, 097. 43			118, 451. 12	10, 942, 848. 89
6, 240	52, 114. 00	20, 924. 22	227. 49	305. 75	3, 739, 789. 00	17, 287, 909. 31
3, 840			119, 183. 34			1, 192, 580. 36
6, 400	5, 705. 82				36, 880. 99	8, 392, 631. 85
6, 400					7, 095, 540. 33	100, 070, 177. 16
6, 400						33, 943, 500. 55
6, 400	*1, 873, 566. 49		1, 040, 640. 00			51, 459, 616. 45
6, 400						41, 499, 081. 63
25, 600						67, 068, 217. 91
44, 800						39, 766, 857. 37
	*249, 611. 19					41, 233, 193. 13
			661, 427. 60		1, 846, 247. 00	70, 704, 558. 00
			2, 039, 040. 00			48, 749, 957. 45
						90, 760, 524. 98
						62, 576, 671. 56
						86, 836, 819. 38
						68, 855, 890. 60
						52, 125, 753. 43
						59, 164, 787. 80
						44, 154, 240. 00
						369, 529, 600. 00
146, 860	2, 384, 742. 89	44, 971. 11	13, 280, 699. 94	8, 955, 383. 75	18, 008, 183. 98	1, 387, 732, 209. 84

p. 371.) in satisfaction of claims against the United States for lands sold within the Las Ormigas and of Nebraska under the act of April 19, 1864, (13 Stat., p. 49.) have been received, not embracing claims confirmed and not yet reported as surveyed.

JOS. S. WILSON, *Commissioner*.

† Including Chickasaw cession

No. 20.—*Historical and statistical table of the United States of North America.*

[NOTE.—The whole area of the United States, including water surface of lakes and rivers, is nearly equal to four million square miles, embracing the Russian purchase.]

The thirteen original States.				Area in square miles.		Population—1860.	
New Hampshire				9,260		326,073	
Massachusetts				7,800		1,231,066	
Rhode Island				1,306		174,620	
Connecticut				4,750		460,147	
New York				47,000		3,880,735	
New Jersey				8,320		672,035	
Pennsylvania				46,000		2,906,115	
Delaware				2,120		112,216	
Maryland				11,124		687,049	
Virginia—East and West				61,352		1,596,318	
North Carolina				50,704		992,622	
South Carolina				34,000		703,708	
Georgia				58,000		1,057,286	

States admitted.	Act organizing Territory.	United States Statutes.		Act admitting State.	United States Statutes.		Area in square miles.	*Population—1860.
		Vol.	Page.		Vol.	Page.		
Kentucky				Feb. 4, 1791	1	189	37,680	1,155,684
Vermont				Feb. 18, 1791	1	191	a 10,212	315,098
Tennessee				June 1, 1796	1	491	45,600	1,109,801
Ohio	Ord'n'ce of 1787			April 30, 1802	2	173	39,964	2,379,502
Louisiana	March 3, 1805	2	331	April 8, 1812	2	701	a 41,346	708,002
Indiana	May 7, 1800	2	58	Dec. 11, 1816	3	399	33,809	1,350,428
Mississippi	April 7, 1798	1	549	Dec. 10, 1817	3	472	47,156	791,305
Illinois	Feb. 3, 1809	2	514	Dec. 3, 1818	3	536	a 55,410	1,711,951
Alabama	March 3, 1817	3	371	Dec. 14, 1819	3	608	50,722	564,201
Maine				March 3, 1820	3	544	a 35,000	628,279
Missouri	June 4, 1812	2	743	March 2, 1821	3	645	65,350	1,182,012
Arkansas	March 2, 1819	3	493	June 15, 1836	5	50	52,198	435,450
Michigan	Jan. 11, 1805	2	309	Jan. 26, 1837	5	144	a 56,451	749,113
Florida	Mar. 30, 1822	3	654	March 3, 1845	5	742	59,268	140,425
Iowa	June 12, 1838	5	235	March 3, 1845	5	742	55,045	674,948
Texas				Dec. 29, 1845	9	108	274,356	604,215
Wisconsin	April 20, 1836	5	10	March 3, 1847	9	178	53,924	775,881
California				Sept. 9, 1850	9	452	a 188,981	305,439
Minnesota	March 3, 1849	9	403	Feb. 26, 1857	11	166	83,531	173,855
Oregon	Aug. 14, 1848	9	323	Feb. 14, 1859	11	383	95,274	52,465
Kansas	May 30, 1854	10	277	Jan. 29, 1861	12	126	81,318	107,206
West Virginia				Dec. 31, 1862	12	633	23,000	
Nevada	March 2, 1861	12	209	Mar. 21, 1864	13	30	112,090	\$6,857
Colorado	Feb. 28, 1861	12	172				a 104,500	110,507
Nebraska	May 30, 1854	10	277	March 1, 1867	13	47	75,995	\$34,277
								112,261
								28,841

Territories.	Act organizing Territory.	United States Statutes.		Area in square miles.	*Population.	
		Vol.	Page.			
Wyoming	July 25, 1868	15	178	97,883	The estimated population of these Territories on January 1, 1865, as above indicated, was 360,000.	
New Mexico	Sept. 9, 1850	9	446	121,201		
Utah	Sept. 9, 1850	9	453	184,476		
Washington	March 2, 1853	10	172	69,994		
Dakota	March 2, 1861	12	229	1150,932		
Arizona	Feb. 24, 1863	12	664	**113,916		
Idaho	March 3, 1863	12	808	111,66,294		
Montana	May 26, 1864	13	85	*143,776		
Indian				68,991		
District of Columbia	July 16, 1790	1	130	10 miles sq're.		
	March 3, 1791	1	214			
*** Northwestern America, purchased by treaty of May 28, 1867.	July 27, 1868	15	240	577,390	70,000	

NOTES TO THE FOREGOING TABLE.

*The total population of the United States in 1860 was, in round numbers, 31,500,000. In 1865 it is estimated that the population was 35,500,000, including the inhabitants of the Territories, estimated at 360,000 persons on January 1, 1865. At the present time, October 15, 1870, the returns of the ninth census are sufficiently full to justify an estimate of our present population at about 41,000,000; at the end of the present century, 107,000,000.

†The areas of those States marked *a* are derived from geographical authorities, the public surveys not having been completely extended over them.

‡The present area of Nevada is 112,000 square miles, enlarged by adding one degree of longitude lying between the 37th and 42d degrees of north latitude, which was detached from the west part of Utah, and also northwestern part of Arizona Territory, per act of Congress approved May 5, 1866, (U. S. Laws 1865 and 1866, p. 43.) and assented to by the legislature of the State of Nevada January 18, 1867.

§ White persons.

|| Indians.

¶ The present area of Utah is 84,476 square miles, reduced from the former area of 88,056 square miles by incorporating one degree of longitude on the east side, between the 41st and 42d degrees of north latitude, with the Territory of Wyoming, per act of Congress approved July 25, 1868.

** The present area of Arizona is 113,916 square miles, reduced from the former area of 126,141 square miles by an act of Congress approved May 5, 1866, detaching from the northwestern part of Arizona a tract of land equal to 12,225 square miles, and adding it to the State of Nevada, (U. S. Laws 1865 and 1866, p. 43.)

Nevada.—Enabling act approved March 24, 1864. (Statutes, vol. 13, p. 30.) Duly admitted into the Union. President's proclamation No. 22, dated October 31, 1864. (Statutes, vol. 13, p. 749.)

Colorado.—Enabling act approved March 21, 1863. (Statutes, vol. 13, p. 32.) Not yet admitted.

Nebraska.—Enabling act approved April 19, 1864. (Statutes, vol. 13, p. 47.) Duly admitted into the Union. See President's proclamation No. 9, dated March 1, 1867. (U. S. Laws 1866 and 1867, p. 4.)

That portion of the District of Columbia south of the Potomac River was retroceded to Virginia July 9, 1846. (Statutes, vol. 9, p. 35.)

*** Boundaries.—Commencing at 54° 40' north latitude, ascending Portland Channel to the mountains, following their summits to 141° west longitude; thence north on this line to the Arctic Ocean, forming the eastern boundary. Starting from the Arctic Ocean west, the line descends Behring Straits, between the two islands of Krusenstern and Rotmanoff, to the parallel of 65° 30', and proceeds due north, without limitation, into the same Arctic Ocean. Beginning again at the same initial point, on the parallel of 65° 30', thence, in a course southwest, through Behring Strait, between the Island of St. Lawrence and Cape Choukotski, to the 172° west longitude, and thence southwesterly, through Behring Sea, between the islands of Alton and Copper, to the meridian of 193° west longitude, leaving the prolonged group of the Aleutian Islands in the possessions now transferred to the United States, and making the western boundary of our country the dividing line between Asia and America.

¶ The present area of Dakota is 150,932 square miles, reduced from the former area of 240,597 square miles by incorporating seven degrees of longitude of the western part, between the 41st and 45th degrees of north latitude, with the Territory of Wyoming, per act of Congress approved July 25, 1868.

||| The present area of Idaho is 86,294 square miles, reduced from the former area of 90,932 square miles by incorporating one degree of longitude on the east side, between the 42d and 44th degrees of north latitude, with the Territory of Wyoming, per act of Congress approved July 25, 1868.

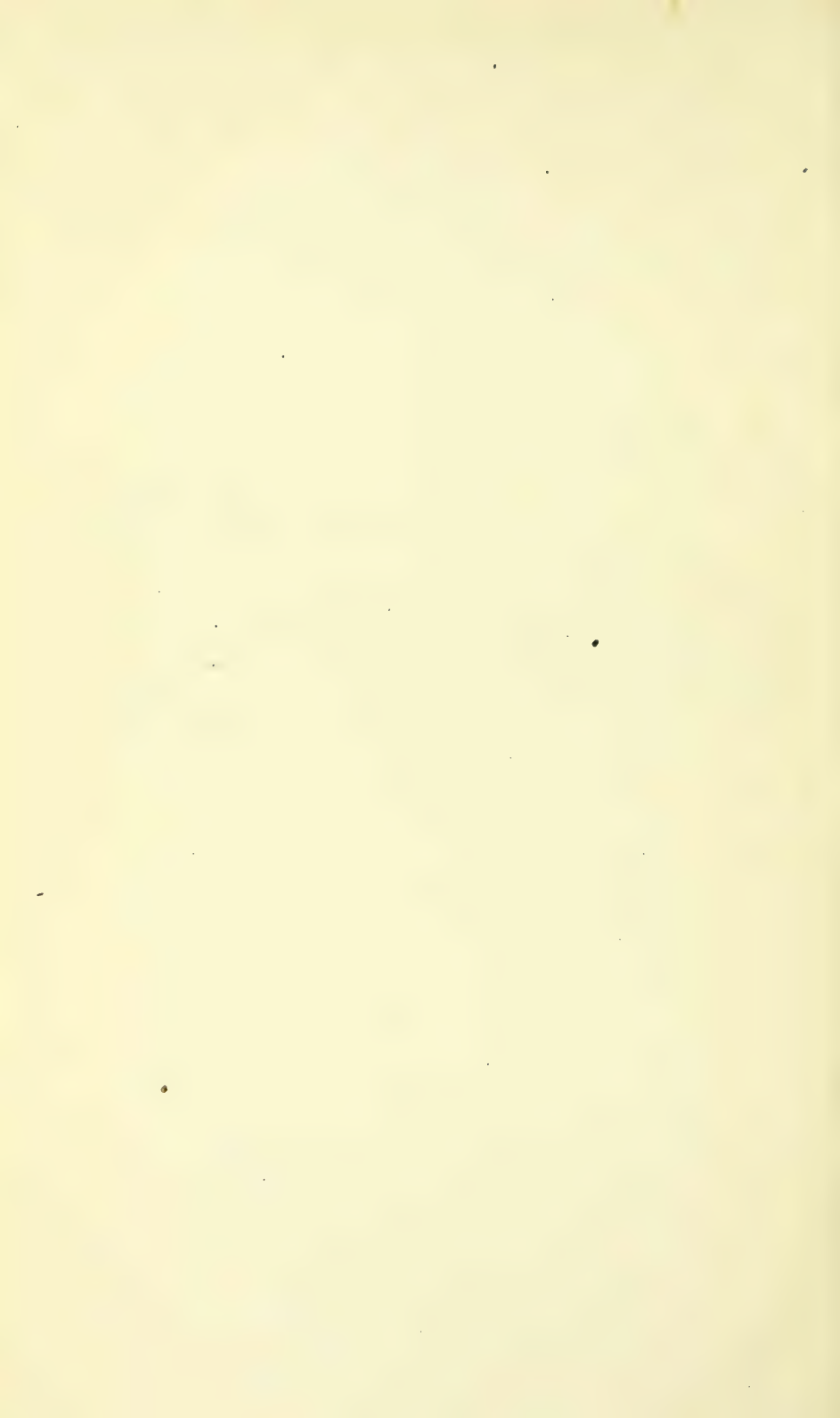
JOS. S. WILSON, *Commissioner*.

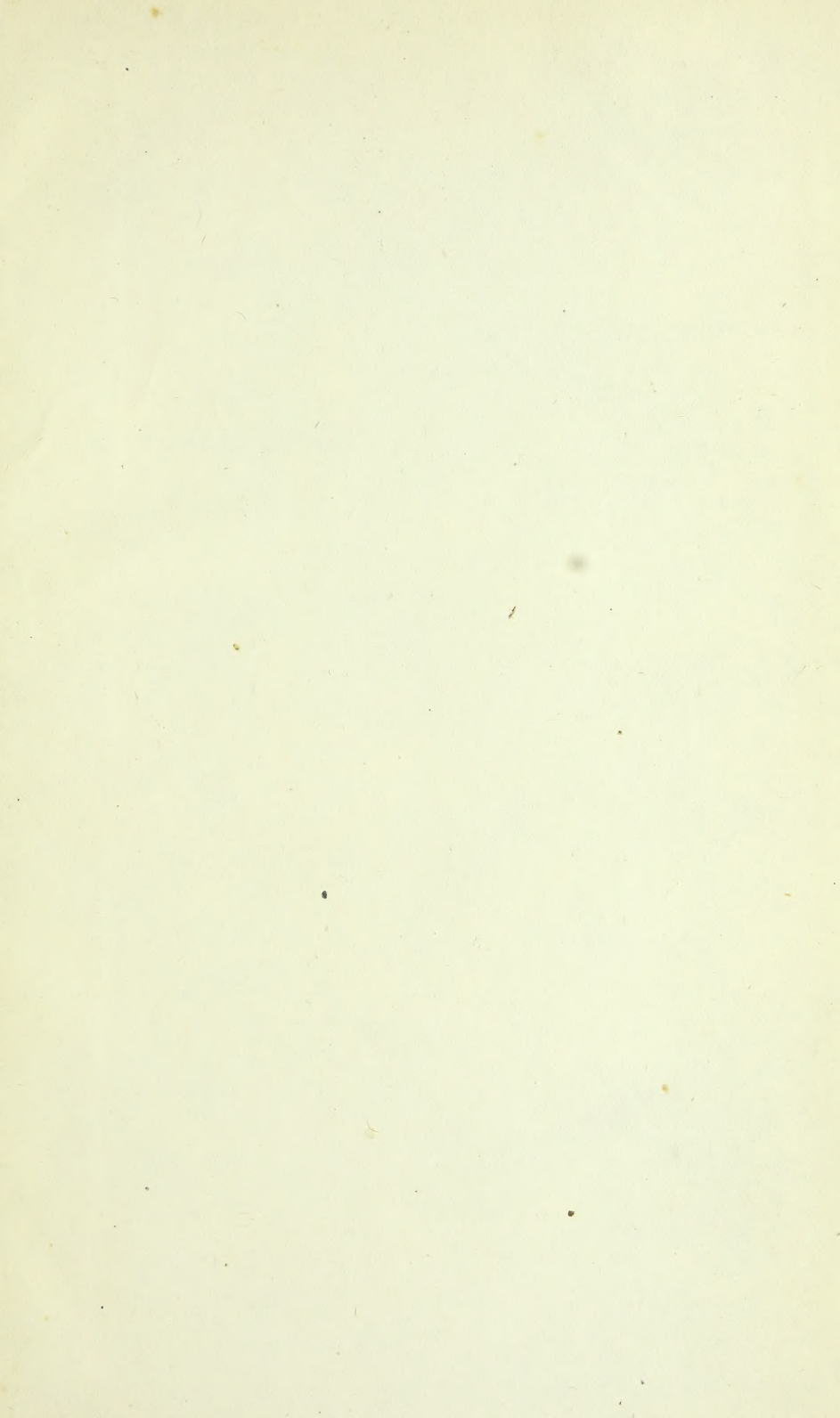
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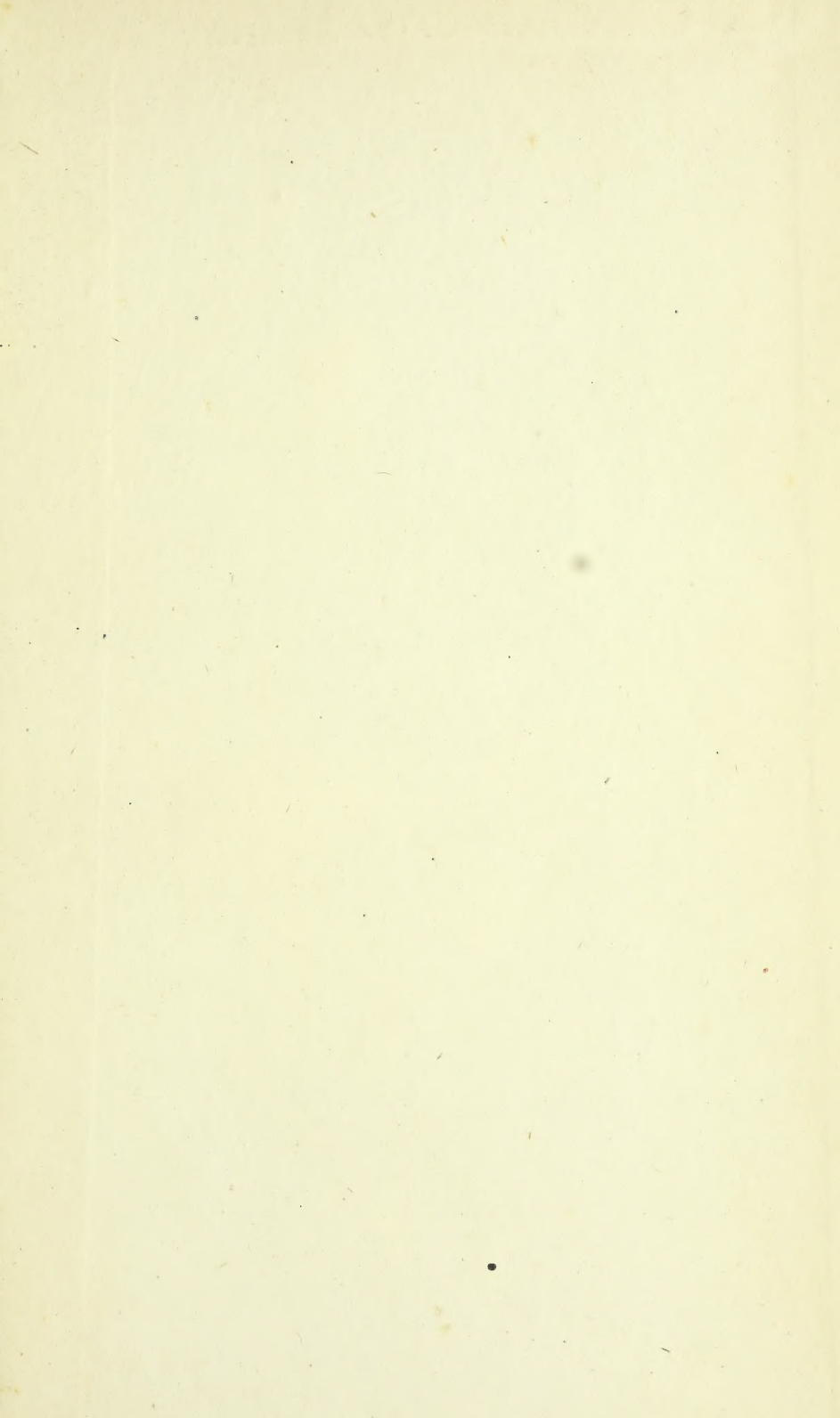
General Land Office, October 27, 1870.











U. S. GOVERNMENT PRINTING OFFICE